

DECEMBER • 1958

Metal Products Manufacturing

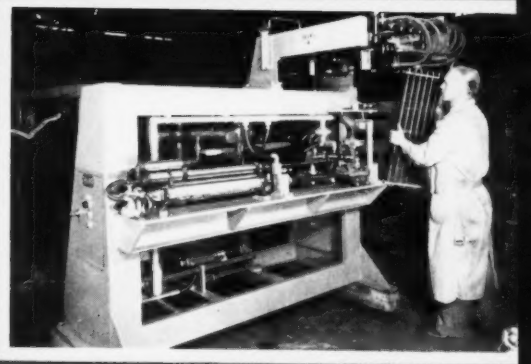
*Serving the
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Fabricated Metal Products
Industry*

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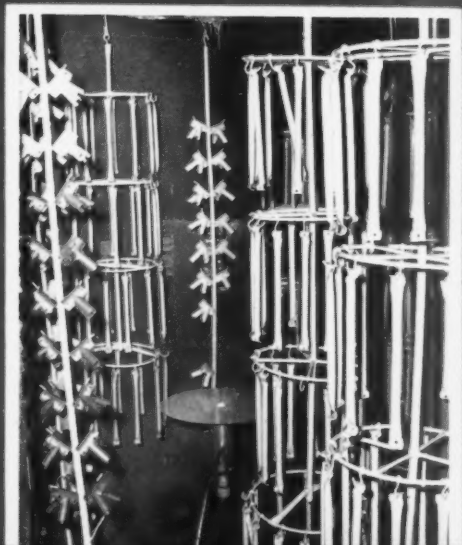
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Reversing Strapping Speeds Coil Making — Page 36



Reversing Strapping Speeds Coil Making — Page 36



Modern Showroom Features in Program — Page 34

At The Glidden Company...



At The Glidden Company, paint drippings from a pebble and steel ball mill are easily cleaned off the Epon resin-based exterior surface coating with a solvent-dipped rag.

Chemical-resistant Epon[®] resin-based coatings guard paint production equipment from corrosion ...greatly reduce maintenance costs

At one of the paint production plants of The Glidden Company, enamel coatings on equipment were often stripped down to bare metal in only 30 days by the corrosive action of caustic cleaners. Maintenance costs were high.

To reduce costs for general housekeeping and repainting, the grinding mills, storage tanks, structural steel, and concrete areas were coated with Glidden's own

Epon resin-based paint, Nu-Pon Cote.

Even though the Epon resin-based coatings are constantly exposed to hot caustic soda solutions, solvents, paint splashes, and abrasion, a fast washing down with solutions of petroleum and ester solvents keeps them clean and bright. Equipment is completely free from corrosion. *The Epon resin-based coatings have already lasted 4 times longer than the previous enamels.*

If you have a paint maintenance problem . . . where ordinary paints just can't take it—ask your plant supplier for Epon resin-based paint. You'll find that it is unsurpassed as an all-purpose industrial coating.

Call on Shell Chemical sales offices for names of suppliers. Write for the full Epon resin coatings story, **PLANNING TO PAINT A PYRAMID?**

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Give Your Product New "Sales-Appeal" with Versatile Armco Stainless Steel

Nothing says *quality* quite so clearly to your customers as Armco Stainless Steel. Its excellent resistance to corrosion and heat, plus high strength and lasting beauty, make your product more durable, more salable.

Add to this the fact that Armco Stainless Steel offers you almost unlimited design possibilities—it can be drawn, formed, spun and finished to meet your individual requirements.

Armco Stainless Steels are available in a wide variety of special or standard grades and shapes. To find out more about what Armco Stainless Steel can do for you, clip and send the coupon today.

ARMCO STEEL CORPORATION, 318 Curtis St., Middletown, Ohio

I want to know more about Armco Stainless Steel. We manufacture _____

New
steels are
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ARMCO STEEL



Armco Division • Sheffield Division • The National Supply Company • Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Union Wire Rope Corporation • Southwest Steel Products

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Chef-O-Matic

**ALL-ELECTRIC
SURFACE ELEMENT
TEMPERATURE
CONTROL**

FOR THE USER

Provides dependable automatic control of cooking temperatures. Any selected increment of temperature from 100° F to 485° F is reached quickly and then uniformly maintained. In boiling, for instance, pan temperature is accurately controlled at any desired point from a slow simmer to a vigorous boil.

These control elements are not fragile — not damaged or thrown out of adjustment in normal service.

There is no danger of electric shock because only low voltage is used in the control circuit. (12 V)

FOR THE RANGE MANUFACTURER

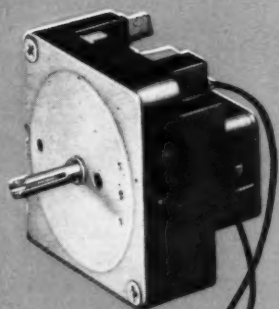
Chef-O-Matic is low in cost. It is easy to install because the two small, compact control elements are ALL-ELECTRIC. They readily fit any electric range. Spade terminals simplify connections.

A single temperature adjusting screw compensates for changes in altitude and for differences in range design.

Fluctuations in line voltage are automatically compensated—likewise ambient temperature up to 220° F.

Control elements safely carry any load up to 3500 W at 15 amp.

Only one transformer is needed regardless of the number of surface elements being controlled.



For complete data, specifications and installation drawings write for Bulletin 576.

KING-SEELEY CORPORATION
ANN ARBOR, MICHIGAN



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MPM

(including finish)

MONTHLY TRADE PUBLICATION

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METAL PRODUCTS MANUFACTURING

FROM RAW METAL TO FINISHED PRODUCT

A trade publication devoted to the interests of the metal products manufacturing industry with special editorial attention to home appliances. The editorial scope covers design, engineering, market and statistical information and technical and practical information on plant facilities and all phases of manufacturing "from raw metal to finished product." Free controlled circulation to top management, purchasing, engineering and key plant management and supervision in metal product manufacturing plants. To others, subscription price is \$8.00 per year, domestic. To all other countries \$10.00 per year (U.S. funds). Single copies, \$1.00.

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MINIMUM MAINTENANCE FOR TYLER SELF-SERVICE UNITS is assured by proper design and material selection. Photo above shows unit during fabrication. Inner and outer walls made of Republic Galvannealed Steel Sheets meet Tyler's requirements for strength, corrosion-resistance, and economy.

In Tyler Refrigerated Food Sales-Cases . . . REPUBLIC GALVANNEALED SHEETS PROVIDE STRENGTH, CORROSION PROTECTION, ECONOMY

In the production of self-service refrigerated food sales-cases, the Tyler Refrigeration Corporation, Niles, Michigan and Waxahachie, Texas, maintains a common objective in design and material selection. This objective is reliability—the ability to withstand year-in, year-out use and abuse with minimum maintenance.

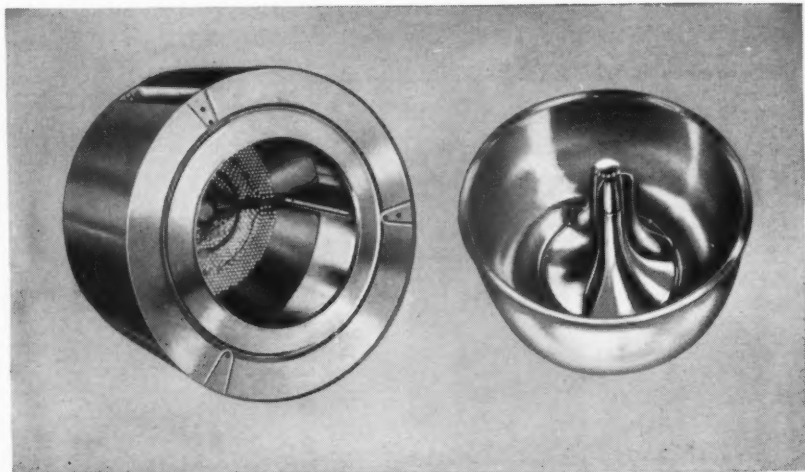
In keeping with this objective, Tyler has found Republic Galvannealed Sheets ideal for inner and outer walls. These interior parts call for strength and corrosion-resistance. Manufacturing requirements call for good ductility.

Republic Galvannealed Sheets meet all of these requirements and provide initial and

long-term economy as well.

Republic Galvannealed has a proved record of performance in thousands of difficult product applications. Its tight, uniform zinc coating, furnace fired for further corrosion-resistance, will take all ordinary forming operations. It can be sheared, blanked, pierced, formed, flanged, soldered, deep drawn, beaded, and Pittsburgh Lock Seamed with ease.

Your Republic representative will be glad to discuss the many advantages of Republic Galvannealed Sheets in relation to your product or production requirements. Contact him today, or mail coupon for further information.



TOP PERFORMANCE AND SALES APPEAL ARE PROVIDED by the use of Republic ENDURO® Stainless Steel for both tub and drum in Speed Queen's Royal Pair Automatic Washer and Dryer. Speed Queen, a division of McGraw-Edison Company, Ripon, Wisconsin, specified ENDURO for two basic reasons. First, its gleaming, smooth, hard surface provides maximum protection for the finest fabrics. Second, ENDURO is unaffected by dyes, soaps, or detergents. These and other advantages may help you solve a product or production problem with ENDURO. Send coupon for data.

EXCELLENT PAINT-ADHERING SURFACE even after severe stamping and forming is provided by Republic Electro Paintlok Sheets for exterior housings of soft-drink dispensers made by Ideal Dispenser Company, Columbus, Ohio. Produced by electro-galvanizing and a chemical treatment process, Electro Paintlok® Sheets are shipped from the mill in prime condition for painting. For some products, only the finish coat need be applied for full protection and attractive appearance. Send coupon for full details.



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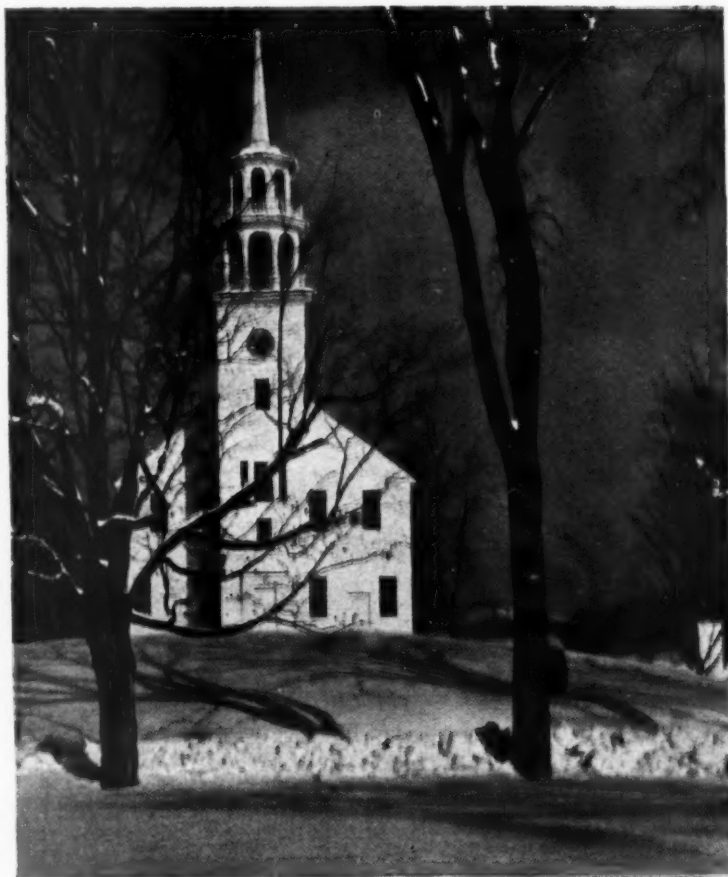
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- ☐ ENDURO Stainless Steel Sheets
- ☐ Electro Paintlok Sheets

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Company _____

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At Christmas time,
when we and our friends turn our thoughts
to the true meaning of Christmas,
we join with them in a sincere wish
for Peace on Earth, Good Will Toward Men.

Richard L. Clark

FEMCO CORPORATION



Accent on excellence

Youngstown enameling sheets



For years, Youngstown Metal Products Company has produced millions of drawn stampings and fabricated parts for the nation's leading metal products manufacturers—such as this bath tub component. Their corporate philosophy has been—“to provide a product of highest quality and unwavering uniformity”.

To secure continuous high-production runs and consistent product quality, Youngstown Metal Products turns to Youngstown's Enameling Sheets as the basic raw material. They report, “Youngstown Sheets give us the proper blend of tensile strength, durability and surface finish that helps us produce a super product for today's highly competitive market.”

Wherever steel becomes a part of things you make, the high standards of Youngstown *quality*, the personal touch in Youngstown *service* will help you create products with an “accent on excellence”.



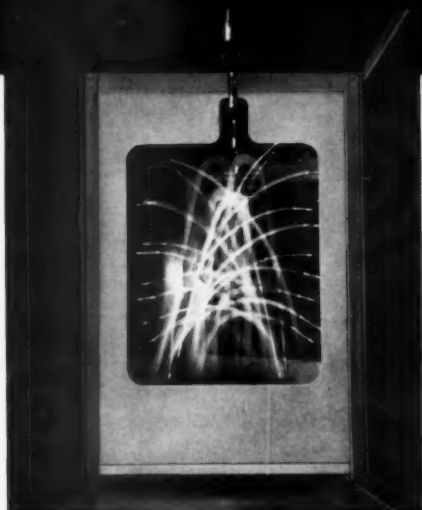
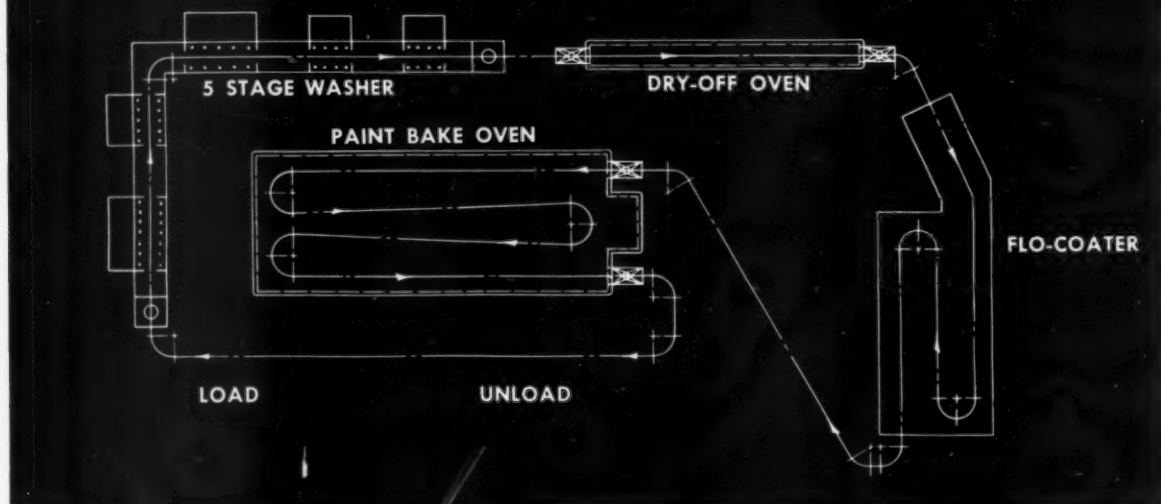
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YOUNGSTOWN

SHEET AND TUBE COMPANY

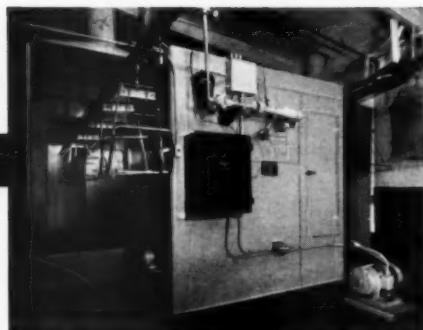
Manufacturers of Carbon, Alloy and Yaloy Steel, Youngstown, Ohio

INTEGRATED



Unique lacquer Flo-Coater has wide flare and long flow path to suit the product—supermarket shopping carts and baskets. Compact MOCO installation gives substantial savings in coating materials over other systems.

Air-jet "curtains" at entrance and exit of MOCO baking oven act as a barrier against heat loss. The system is fully equipped with electronic flame failure safeguards.



Finishing Systems— Cost Controlled for Modern Production

Integrated Finishing Systems are more than just a plan and installation designed to meet the customer's needs in materials, space and output. At Michigan Oven, engineering a cost-controlled finishing system means equipping for today's demands, and for tomorrow's production.

The lacquer Flo-Coating system illustrated above is a complete and efficient system. Behind its installation lies a thorough study of the plant, of the product, of quality control and initial investment.

This finishing system will pay for itself in a relatively short time. It's engineered for economy, low maintenance and safety—and it will adapt readily to future expansion at low cost.

Send for a free MOCO bulletin showing typical finishing system applications, including products, process and specifications, or write for the name of the MOCO representative nearest you.

MICHIGAN OVEN COMPANY

F-1



FINISHING EQUIPMENT DEPARTMENT

411 BRAINARD, DETROIT 1, MICHIGAN

Washing Machines • Bonderizing Units • Dry-off Ovens • Dip Tanks
• Spray Booths • Flo-coaters • Finishing Ovens • Conveyors

JAI-ALAI
ACE
FAILS
TO FLAKE
INLAND

TI-CO



FABRICATION WON'T FLAKE TI-CO EITHER

A jai-alai ball travels at speeds over 100 m.p.h.—hits with terrific impact. From a distance of only 60 feet, one of Mexico's leading jai-alai players, Jose Fuerto, slammed the ball into a TI-CO Galvanized Sheet again and again—severely pounding it—but there wasn't a sign of flaking!

In your manufacturing operations, TI-CO can be deep drawn, stamped, bent, crimped, lock-seamed, even spin-drawn, without flaking or peeling. In fact, any product that can be made from cold rolled steel can be made from TI-CO, giving your product dependable protection against corrosion and an eye-appealing finish that can mean stepped-up saleability.

If you are designing or manufacturing a metal product that requires rugged strength plus corrosion resistance, you'll find TI-CO Galvanized Sheets the practical and economical solution. Coils or cut lengths up to 60" widths; gages 8 to 30 inclusive. Consult your local steel distributor or Inland representative. Write today for a free, informative booklet on TI-CO.



**INLAND
STEEL**

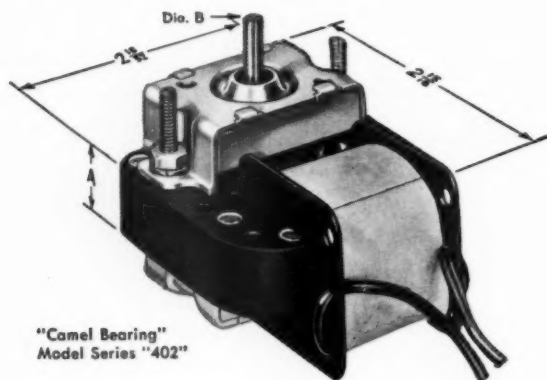
INLAND STEEL COMPANY

30 W. Monroe Street • Chicago 3, Illinois

Sales Offices: Chicago • Milwaukee • St. Paul • Davenport
St. Louis • Kansas City • Indianapolis • Detroit • New York



SORENG shaded pole motors with CAMEL BEARING design give extra long life service



The "402" Shaded-Pole Motor is built to last. It's a rugged little powerhouse with an extra long life due to its exclusive, Camel Bearing design. This special bearing bracket provides automatic, positive oil circulation even under high temperatures. Oil is constantly feeding into bearing cavities as operating conditions demand. Standard mounting holes make it interchangeable with other motors. Range of 12 models covers all types of applications including spring-wire, gear, chain, rubber belt and friction drives or, to move high velocity, heater or sir-occo air. Write for free booklet.

Series "401" for standard life applications — Here's a tough, durable model shaded pole motor that has bearings with self-aligning features and an open-skeleton frame for effective heat dissipation. Choice of 12 models.

DRAWINGS NO'S	402-10	402-20	402-30	402-40	402-50	402-60
	402-11	402-21	402-31	402-41	402-51	402-61
	401-10	401-20	401-30	401-40	401-50	401-60
	401-11	401-21	401-31	401-41	401-51	401-61
VOLTS	115	115	115	115	115	115
FREQUENCY	60	60	60	60	60	60
AMPERE—NO LOAD	0.31	0.42	0.55	0.64	0.97	1.31
WATTS—NO LOAD	13.5	19	24	27.7	40	53
R P M.—NO LOAD	3400	3480	3500	3570	3560	3550
MAX. HP. OUTPUT(1)	1/500	1/200	1/125	1/75	1/50	1/40
START TORQUE OZ. IN	0.58	1.4	2.3	2.3	3.3	4.9
STALLED WATTS	18	29	40	45	68	98
STACK WIDTH "A"	3/8"	3/8"	3/8"	3/8"	1-1/8"	1-1/2"
SHAFT DIA. "B"	0.182	0.182	0.182	0.182	0.2178	0.2178
WEIGHT—POUNDS	0.8	1.2	1.4	1.6	1.9	2.4

NOTES: (1) HP rating at 3000 RPM — continuous duty fan load.
(2) All numbers ending in "0" denote clockwise shaft rotation.
All numbers ending in "1" denote counter-clockwise shaft rotation.



CONTROLS COMPANY OF AMERICA

Manufacturers of **SORENG** controls

9559 Soreng Avenue • Schiller Park, Illinois

controls that make modern living possible



from the Editor's Mail

Wishes names of suppliers

Gentlemen: In the August, 1958 edition of METAL PRODUCTS MANUFACTURING, on page 44, there is an editor's note referring to Formica, Micarta, Textolite, and Conolite. We are familiar with Formica and Textolite, but would appreciate very much if you would supply us with the names of the manufacturers of Micarta and Conolite.

D. R. Snider, Purchasing Agent
Sunshine Waterloo Co. Limited
Waterloo, Ontario, Canada

They are: Micarta, Plywoods Plastic Corp., Hampton, S. C.; and Conolite, Continental Can Co., Crown and Cork Div., Conolite Operations, Wilmington, Del. Eds.

Anodized aluminum article

Gentlemen: Will you be so kind and forward to me one copy of the August, 1957 issue of METAL PRODUCTS MANUFACTURING. I believe it contains an article on anodizing for aluminum which I am interested in.

F. Schuster
Foremost Mfg. Co.
Maplewood, N. J.

The article referred to is "A study of the characteristics of anodized aluminum," by R. V. Vanden Berg, Aluminum Co. of America. Eds.

Porcelain enamel section of interest

Gentlemen: Your letter of October 7, 1958, directed to Mr. Gagnon, has just reached my desk.

We were very impressed with the October issue of METAL PRODUCTS MANUFACTURING, in which a portion was devoted to Porcelain Enameling on Aluminum. Your editorials are excellent; and we were very pleased to be mentioned in the Du Pont advertisement, as well as in the "Porcelain Enamellers" column on page 47. . . .

We are certain that your publication will continue to be of immense help to all enamellers, and shall look forward in the future to a pleasant relationship of mutual interest.

L. M. Trout, Vice President
Shaffer Sign Service, Inc.
West Palm Beach, Florida

Values MPM, wants infra-red reprints

Gentlemen: I was given a copy of your magazine, METAL PRODUCTS MANUFACTURING, and feel that it can be of great value to us.

We are an automotive parts supplier of sheet metal stampings, and stamping assemblies. Our Controls Systems Co. has recently marketed a production control device for use in industry.

If it is at all possible, I would greatly appreciate receiving reprints of your articles on "infra-red heating."

R. W. Campbell, Chief Engineer
Hancock Mfg. Co., Jackson, Mich.

August issue of especial importance

Gentlemen: We were very pleased to receive the August issue of your magazine, METAL PRODUCTS MANUFACTURING, and it was most gratifying for us to read our article on your feature page.

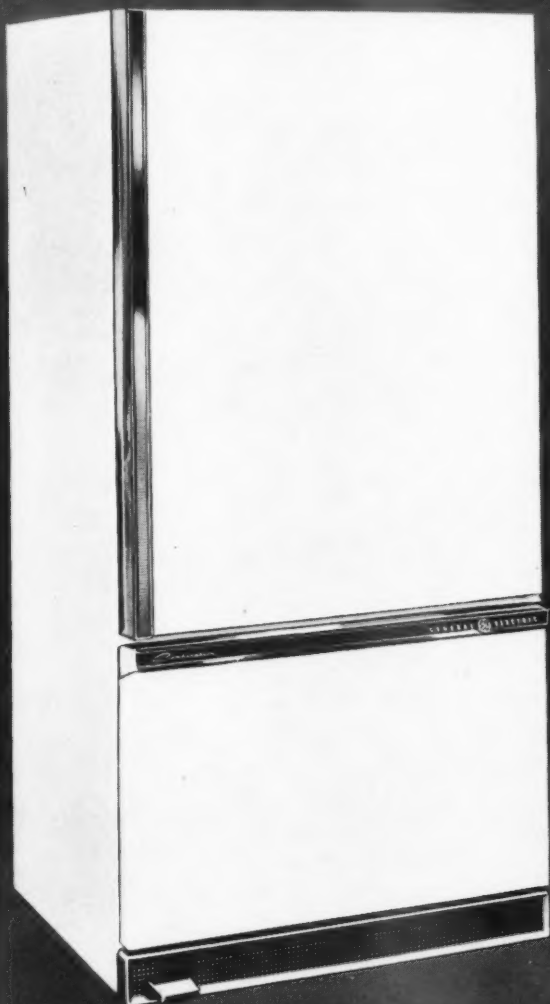
We are wondering if it would be possible for you to send us, at your convenience, ten copies of this article so that we could distribute them among our interested parties.

G. C. Larkin, Production Manager
Columbia Steel Equipment Co.
Fort Washington, Pa.

The article referred to is "Modern building wall adhesives and assembly techniques speed desk-top bonding, Page 44, August MPM. Eds.

to Page 46 →

**NEW GENERAL ELECTRIC
REFRIGERATOR-FREEZER
"MOST MODERN"**



**When quality of finish
must be the finest—
today's leaders
in refrigeration choose
Du Pont DULUX® Enamel**

Modern appliances call for a modern finish. The quality of finish available to assure good appearance and long wear in major appliances has kept pace with mechanical improvements.

DULUX is an enamel uniquely qualified for the protective role, developed specifically to suit the needs of manufacturers—and users—of major appliances. DULUX will protect the good looks of appliances through the years, through long service and the effects of wear and household cleansing compounds.

The dependability of DULUX is based on consistency of performance. It is backed by Du Pont quality control, assuring that colors never fail to meet specifications, whites, a *true* white.

When you use DULUX on your line, you can depend on trouble-free performance where it counts: on your production line, in the customer's home. And there's a DULUX appliance finish suitable to whatever method of application you choose for your next job.

A talk with your Du Pont Finishes Representative will give you some real help. Why not arrange it soon?

**E. I. DU PONT DE NEMOURS & CO. (INC.)
FINISHES DIVISION, WILMINGTON 98, DEL.**



BETTER THINGS FOR BETTER LIVING... THROUGH CHEMISTRY

"DULUX" ENAMEL

America's leading home appliance finish...

Over 65,000,000 major home-appliance units have been finished with Du Pont DULUX Enamel.



Vitrenamel draws deep, fires smooth, and resists warpage at high temperatures!

At Federal Enameling and Stamping Company, McKees Rocks, Pa., they make a 14-inch draw on some sink models. For this, Federal *has* to use a ductile steel. That's one reason why they use USS Vitrenamel.

But, ductility is only half the story at Federal. The steel has to take a flawless, porcelain-enamel coat—no blisters, no fish scales, no lines. They use USS Vitrenamel because it's heat-treated to develop optimum ductility and enameling characteristics.

Resistance to warpage at high temperatures is a must in the enameling industry. The low-carbon and low-manganese of USS Vitrenamel provide the non-sagging characteristics required to maintain form with-

out warping, even during high-temperature firing of the enamel.

With USS Vitrenamel, Federal makes a line of sinks that meets the highest standards of a quality-conscious, leading producer of enamelware.

You can have the same results. Specify USS Vitrenamel.

USS and Vitrenamel are registered trademarks

United States Steel Corporation—Pittsburgh
Columbia-Geneva Steel—San Francisco
Tennessee Coal & Iron—Fairfield, Alabama
United States Steel Supply—Steel Service Centers
United States Steel Export Company

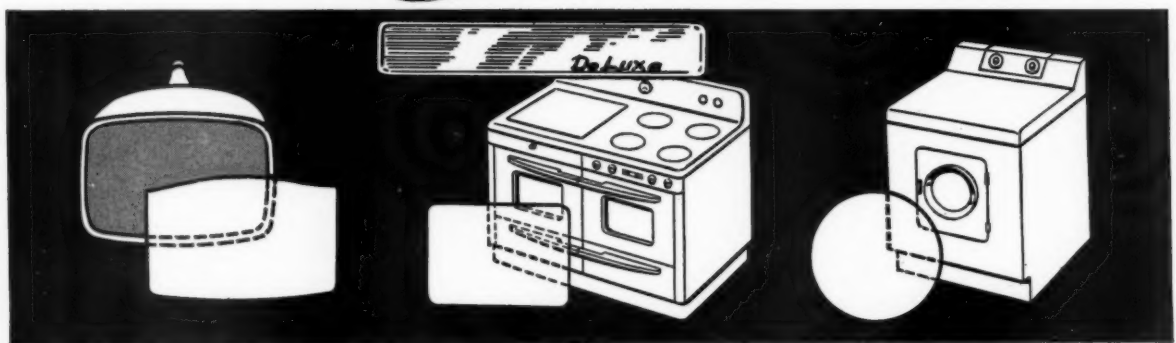


United States Steel



MARSCO

Glass



for TELEVISION • MODERN RANGES • WASHING MACHINES

Let MARSCO'S Craftsmen-Engineering Team
IMPART TO YOUR PRODUCT ALL THE ADVANTAGES OF GLASS

Here are some of the applications for Marsco heat-treated, tempered and hardened glass parts:

- CLOCK & TIMER CRYSTALS
- OVEN DOORS
- RADAR EQUIPMENT
- AIRCRAFT ACCESSORIES
- PHOTOGRAPHIC EQUIPMENT
- LIGHT LENSES
- DIALS & NAME PLATES
- TELEVISION EQUIPMENT
- INSTRUMENTS
- MEDICAL EQUIPMENT
- BACKGUARD GLASS FOR RANGES
- LAMP GLASS
- SHELVING

Special Shapes for: Instruments, Gauges, Household and Industrial Appliances.

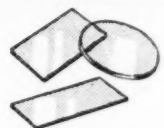
Marsco



Bent Glass



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Heat-treated Glass

MARSCO MFG. CO., 2909 S. HALSTED ST., CHICAGO 8, ILL.

NEW

KERNS "DRY-FILM"® 6674 DRAWING COMPOUND

FOR PARTICULARLY DIFFICULT OR DEEP DRAWS...

KERNS DF 6674 IS A NEW PRODUCT. This drawing compound has many fine qualities:

1. Fluid type (water soluble).
2. Is applied COLD by any conventional method, such as: automatic spraying, roller coating or dipping.
3. Excellent rust inhibiting characteristics before and after drawing.
4. Particularly adaptable for difficult or deep draws, eliminating scrap and scoring.
5. The parts are easily cleaned even after long storage.

Take advantage of Kerns "MEMO BILLING TRIAL BASIS:" Let L. R. Kerns supply sufficient material for a production test to prove the merits of DF 6674. No formal invoice rendered until and *unless* completely approved in production. Technical service bulletin available on request.

PRODUCERS OF:

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Phosphatizing Compounds — Wire Drawing Compounds — Rope and Twine Compounds —
Cleaning Compounds — Cling Oils — Rolling Oils — Rust Preventives — Specialized Greases
— Wire Rope Lubricants — Spray Booth Compounds

QUALITY



SERVICE

L.R. Kerns Company

2659 East 95th Street

Chicago 17, Illinois

Subsidiary Plant **KERNS PACIFIC CORPORATION**
630 N. Batavia Street Orange, California

Offices in principal cities throughout the U. S. A.



season's
greetings
from
the
folks
at
Ferro



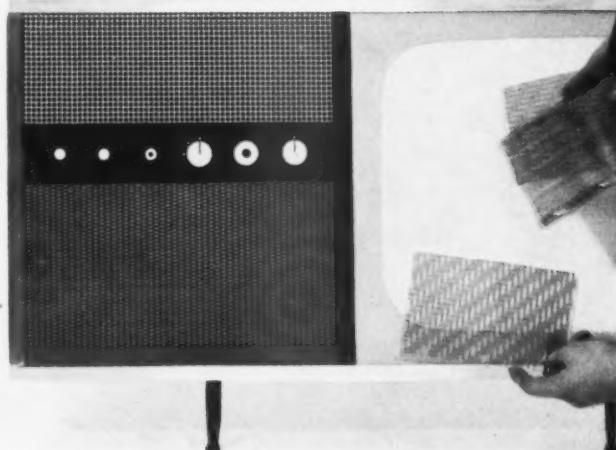
Idea!

H & K perforated metals serve a function of design

The orientation of television, AM-FM radio and phonographic elements into one modular housing containing all mechanical, electronic and control devices is one function of the mock-up illustrated. Another is the utilization of H & K Perforated Metal for the necessary ventilation and sound requirements of such equipment.

H & K Perforated Metal offers the Industrial Designer and other men of ideas, materials that are aesthetically interesting and functionally honest.

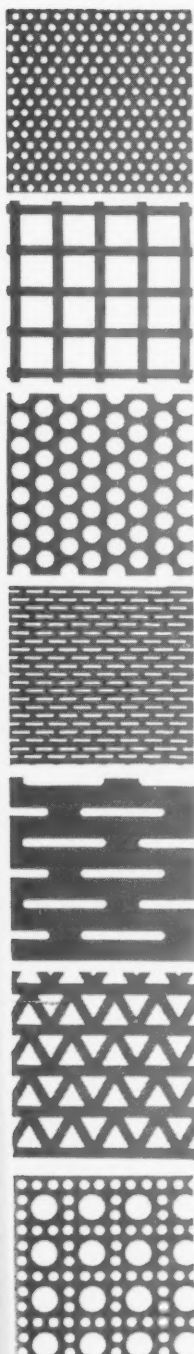
*



*If perforated materials can be
utilized in your product, please contact us.
Our sales engineers will be pleased
to work with you.*

Fill in and mail coupon to nearest H & K office

*Product Development by William M. Schmidt Associates.



A few of the many
H & K Patterns
available.

THE Harrington & King
PERFORATING CO., INC.

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New York Office and Warehouse
116 Liberty St. • New York

Please send me—

- ☐ GENERAL CATALOG
☐ STOCK LIST of Perforated Steel Sheets

NAME _____

TITLE _____

COMPANY _____

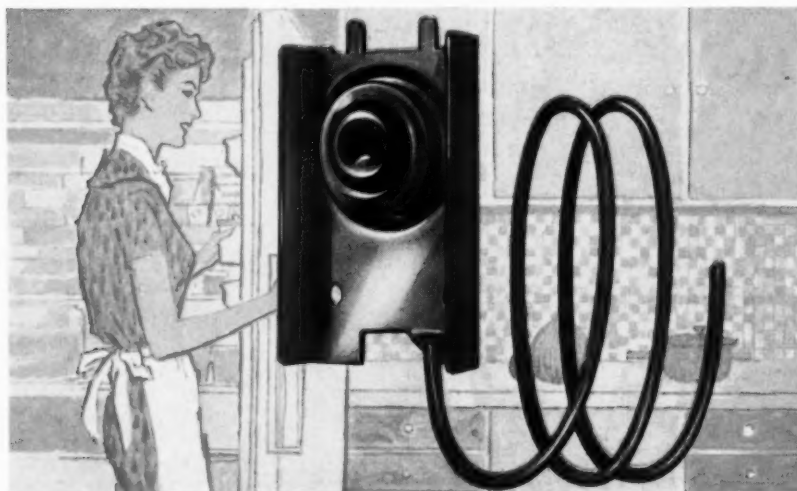
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BRIDGEPORT'S LOW-COST ANSWERS

to your temperature sensor* needs!



***BELLOWS** assemblies provide accurate control with no drift for your cold or heat sensing applications such as oven and refrigerator controls. They simplify design, cut assembly costs, save space and weight and replace costlier sensing devices. Custom-engineered as a complete "package" in many metals. WRITE FOR BELLOWS BULLETIN K-105!



***DIASTAT®** assemblies eliminate the need for ambient temperature compensating devices in many applications. These low-cost stainless steel "packaged" units offer extreme accuracy with no resetting at temperatures up to 650°F . . . used in appliances and other controls where a short stroke is desired. WRITE FOR DIASTAT BULLETIN K-6012!



Robertshaw-Fulton
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INDUSTRY MEETINGS

REFRIGERATING ENGINEERS

American Society of Refrigerating Engineer's Semi-Annual Meeting, Hotel Roosevelt, New Orleans, La., December 1-3, 1958.

HEATING AND AIR CONDITIONING

National Warm Air Heating and Air Conditioning Association's Committee Meetings and Annual Convention, Cleveland, Ohio, December 1-4, 1958.

HOUSEWARES

National Housewares Manufacturers' Association's National Housewares Exhibit, Chicago, Ill., January 12-16, 1959.

INDUSTRIAL HEATING

Industrial Heating Equipment Association, Inc., Hotel Cleveland, Cleveland, Ohio, January 19-20, 1959.

ELECTRICAL ENGINEERS

American Institute of Electrical Engineer's Winter General Meeting, New York, N. Y., January 19-23, 1959.

PLANT MAINTENANCE

Tenth Plant Maintenance and Engineering Show, Public Auditorium, Cleveland, Ohio, January 26-29, 1959.

HEATING, AIR CONDITIONING

American Society of Heating and Air Conditioning Engineers, Inc., Annual Meeting and Exposition, Philadelphia, Pa., January 26-30, 1959.

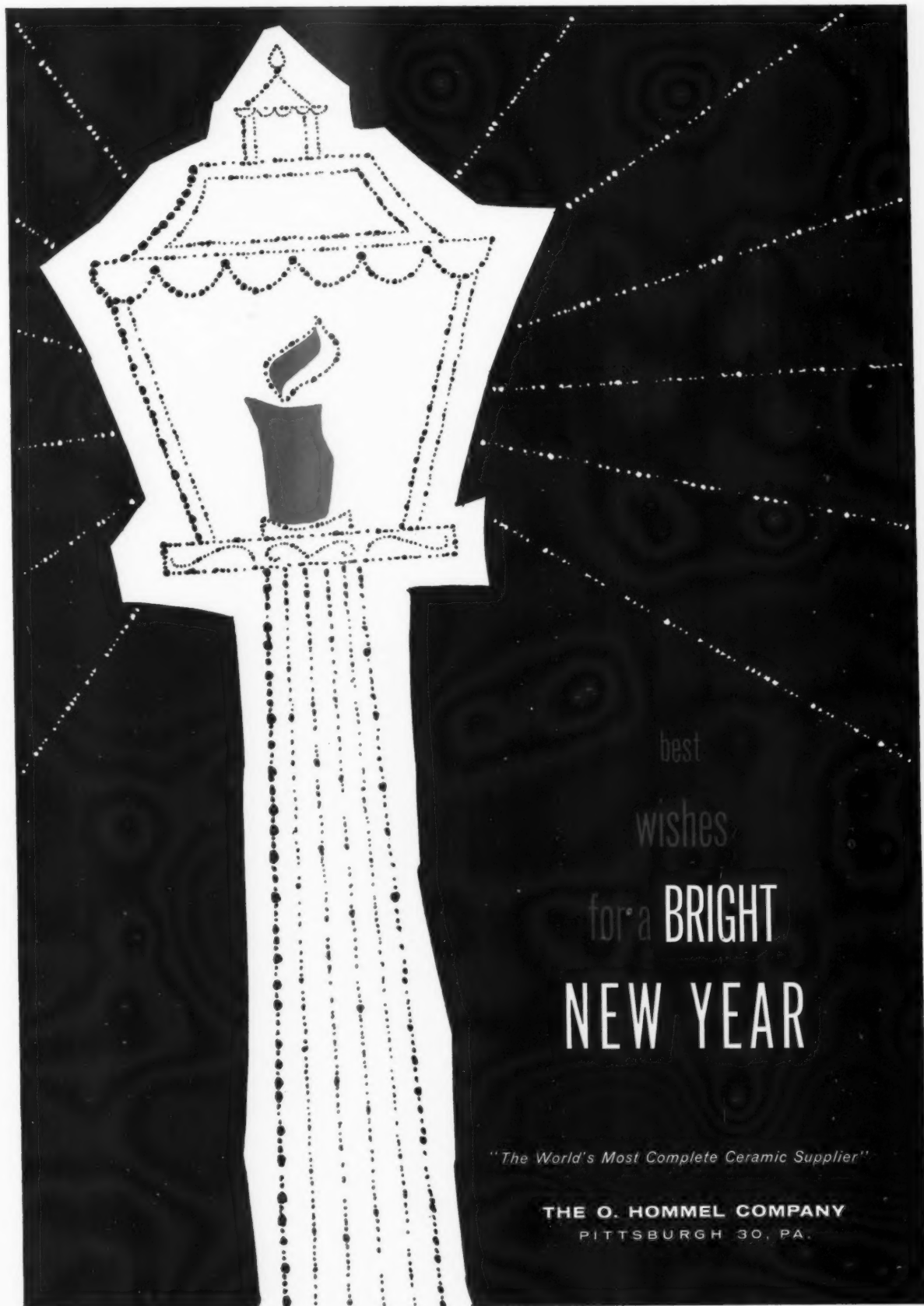
WELDING

Fifth Annual Midwest Welding Conference, Illinois Institute of Technology Chemistry Building, Chicago, January 28-29, 1959.

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THE O. HOMMEL COMPANY
PITTSBURGH 30, PA.

Automatic brazing speeds coil making

IN LESS THAN ONE-THIRD the floor space formerly used, the Machinery and Systems Div. of Carrier Corp., Syracuse, N. Y., has combined a fast

the tubes must be expanded to lock the fins in place.

The coil building assembly line shown in Fig. 1 consists of an oval track of

by Harry E. Miller • CHIEF MANUFACTURING ENGINEER
COIL DEPT., CARRIER CORP.

running press, an automatic gas-fired brazing machine, and a dual-purpose hydraulic expander into a semi-automatic coil building line that is producing coils at the rate of 300 per day with three men. Formerly, six men built 115 per day by hand methods. Because of more consistent reproducibility of brazing, rejections have been reduced 67 per cent over previous hand brazing methods.

To complete each coil three operations are performed; aluminum fins must be placed on the copper tubes, return bends and connector sleeves must be brazed onto the tubes, and

two rails, one at working level and one directly below, about one foot off the floor. Carriages hang vertically from the top rail with the bottom of the carriage riding against the lower rail. The carriage is also a fixture which holds three bent copper tubes.

Press stacks fins

The operator at the loading station locks the three "U" tubes to the carriage to start the assembly cycle. As the tubes are fixed on the carriage, bullet heads are placed in the ends of the tubes to guide the fins at the press. The operator then manually shifts the car-

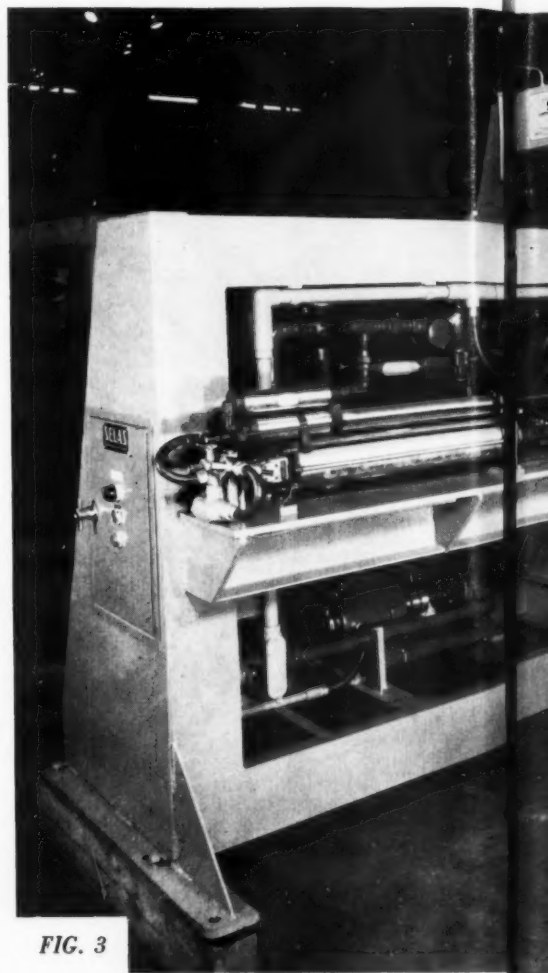


FIG. 3

FIG. 1

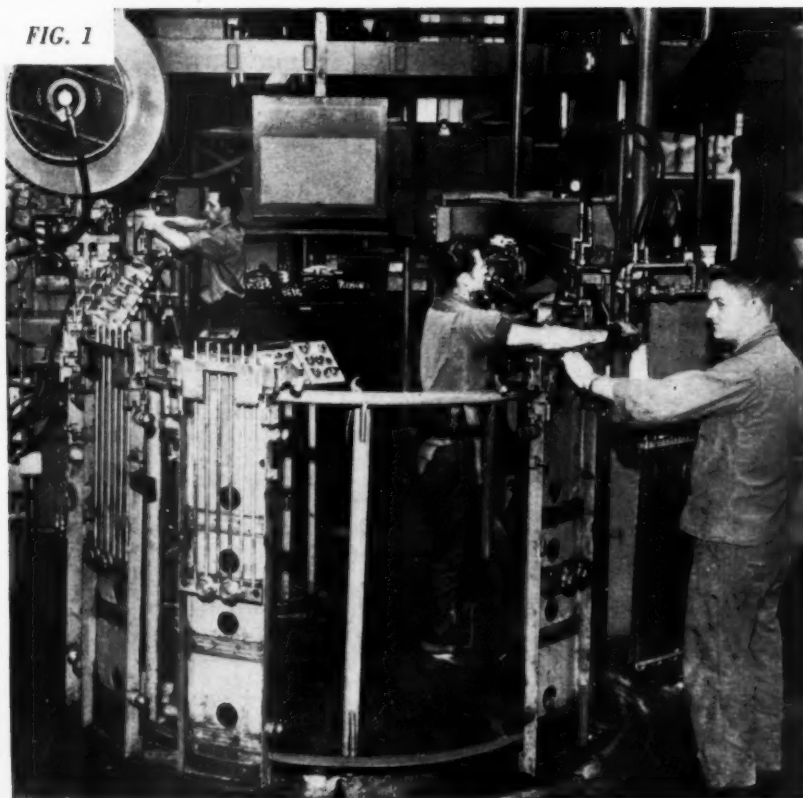


FIG. 2





FIG. 1 — Semi-automatic assembly line for small air conditioner cores. Operator at left removes carriage from fin-stacking press, operator at center controls tube expander-tester, and operator at right removes finished coil from carriage. **FIG. 2** — Operator moves assembled coil components into brazing machine storage area. **FIG. 3** — Brazing machine was designed specifically to fit coil production line. Pneumatic actuators position each coil for brazing. Gas/air mixing equipment is mounted on frame below handling equipment. Controls are centralized in cabinet at left. **FIG. 4** — Each joint in coil is heated for brazing by two accurately-controlled spear-shaped flames. **FIG. 5** — Each coil is completely assembled, brazed, and tested for possible leaks before removal from conveyor carriage.

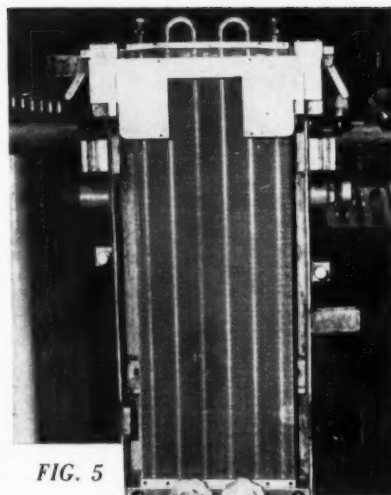


FIG. 5

PHOTOS COURTESY SELAS CORP. OF AMERICA

riage to a section of the track where several are "stocked" while awaiting placing of fins.

An air-activated cylinder takes the foremost carriage and automatically locks it under the high speed press. The press, using a five station die, feeds in 0.010-inch aluminum stock, cuts and punches suitable holes in the sheet, and presses up to 285 fins per minute over the tubing. When the proper number of fins are stacked on the tubes, the carriage is automatically shifted along the track to a tube expander. The ends of the tubes are belled so they will accept the return bends and connector sleeves.

Coils automatically handled through brazing operation

After the beelling operation, an operator places preformed brazing rings at the joints along with two tube return bends and two connector sleeves. He then pushes the carriage, as in Fig. 2, to a storage area along the track adjacent to the automatic brazing machine. At timed intervals, synchronized with the expanding unit, an air cylinder moves the carriage into the brazing machine.

The brazing machine was designed to Page 58 →

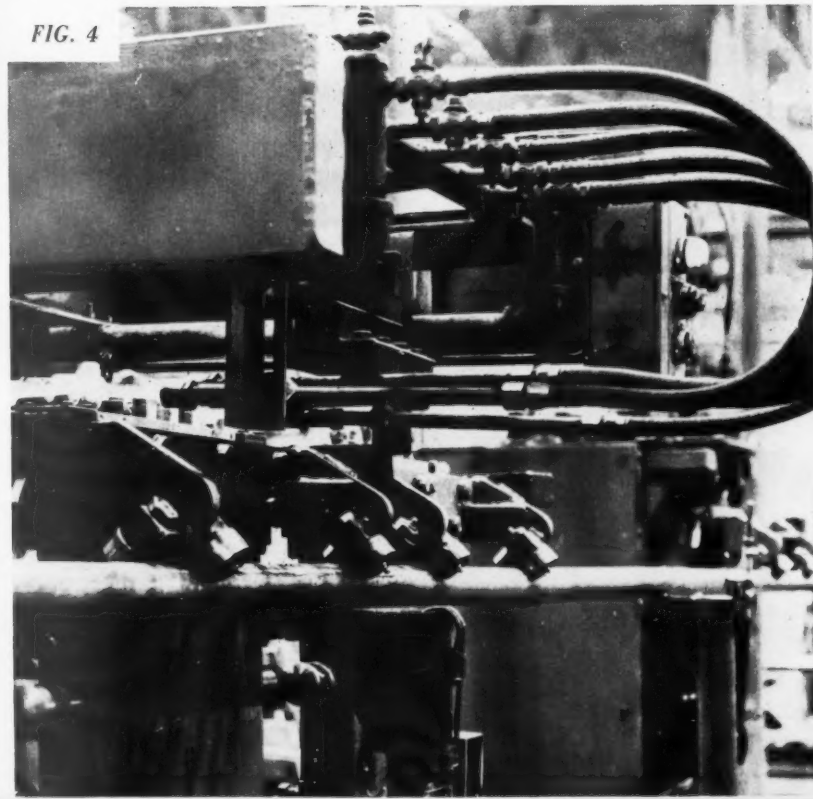
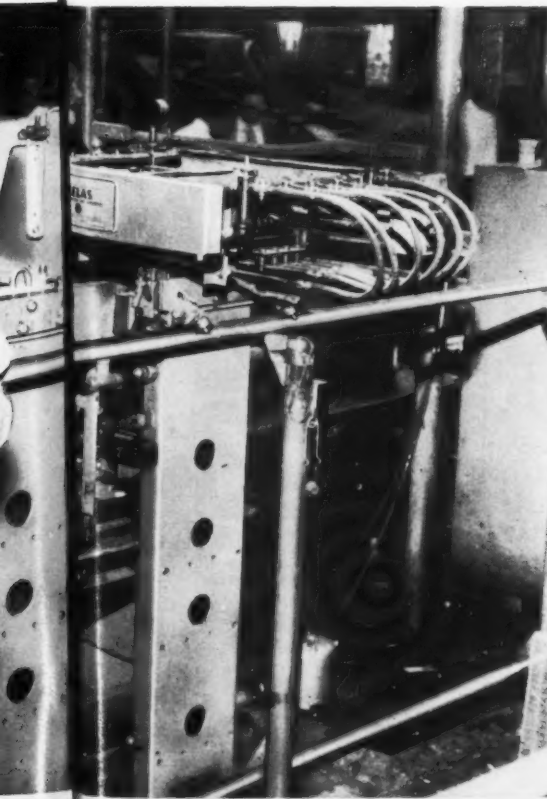
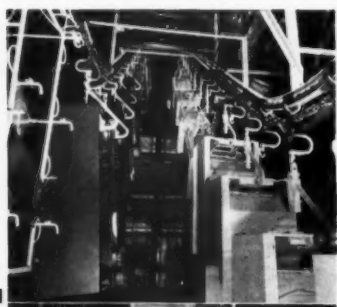
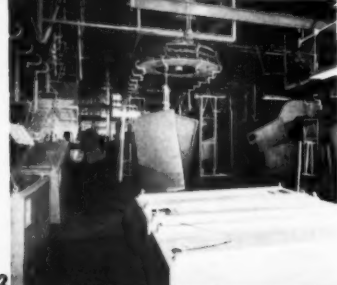


FIG. 4

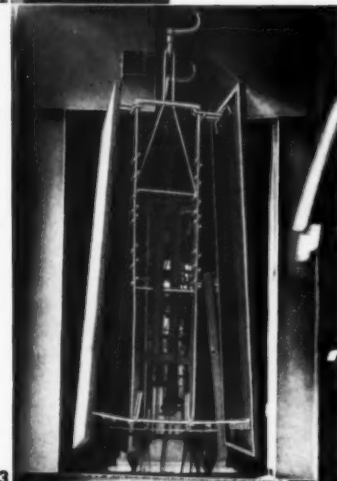
hundreds of refrigerators and freezers a day..... less than 2% rerun



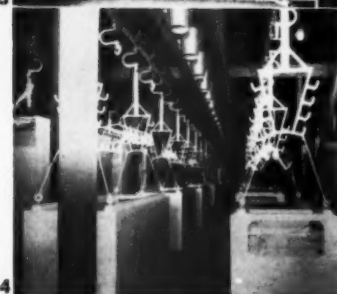
1



2



3



4

The story of a major appliance manufacturer's extraordinary Despatch Finishing Line

This system, completely designed and installed by Despatch, finishes hundreds of units a day with more than 98% accuracy. Interiors as well as exteriors! At 25 feet a minute!

Imagine this speed and accuracy in a system so big it is housed in a separate building designed by Despatch. So big it has 4,600 feet of conveyor. So big the air make-up system moves 220,000 C.F.M. and is heated by a 19 million B.T.U. gas fired line burner.

The reason? High efficiency engineering and some of the most modern heat processing components. You see just a few of them in these photos.

1. Unfinished units enter finishing building at left, through a Despatch-designed overhead tunnel. 2 hours, 24 minutes, 10 seconds later, finished units leave at right.
2. Units in center have left dry-off oven, following 6 stage washer where over-fired system heats water in just 40 minutes. Continuous sludge removal in Bonderite stage.
3. Flow Coater: 23 minute vapor chamber run. Recirculates paint; 100% filtration. Next stages: prime coat bake oven, 20 minute cooling run, pressurized tack-rag run and electrostatic painting.
4. In finish bake oven overhead nozzles force heated air against floor to circulate heat completely around and through units.

Another example of Despatch's leadership in the heat processing industry. When you have any heat processing problem, call on Despatch's unmatched experience—50 years and 50,000 installations.



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DESPATCH

THE MPM
spotlight



Kelvinator 30-inch electric range for 1959 features large oven with disposable linings of aluminum foil covering back, bottom, and both sides, and simplified automatic oven and surface unit controls. The entire range is finished in porcelain enamel, including backguard, door front, and storage drawer front.

Chemical Prepaint Treatments for Metal Surfaces

What they do, the types available, how they are applied



By J. H. GEYER
Manager, Product
Development Dept.,
AMCHEM
PRODUCTS, INC.

Paint systems have been steadily improved in an effort to produce more decorative, easier-to-apply, and more corrosion-resistant films. The ability, however, of any paint film to perform its predetermined functions cannot be fully utilized without properly preparing the metal surface.

The prepaint preparation of the metal surface is therefore a highly important part of the system. Chemical prepaint treatments are designed to do four jobs and do them well. First, they remove organic soils, shop dirt, scale, and rust or corrosion products from the metal surface. Second, they provide surfaces that are completely compatible with subsequent paint films. Third, they produce a *tooth* that promotes good paint film adhesion. Fourth, they effectively prevent underpaint corrosion growth after any breakthrough in the paint film.

Basically, there are four types of chemical prepaint treatments. These are phosphoric acid, iron phosphate, zinc phosphate, and amorphous phosphate or chromate. Each is discussed briefly in the following paragraphs.



Phosphoric Acid

Perhaps the most widely used and certainly one of the most economical chemical prepaint treatments is the phosphoric acid cleaner combination materials. ACP Deoxidine® is such a material. It removes organic soils, rust, scale and contaminating elements from the metal surface. It also produces a light etch on steel, aluminum or zinc surfaces which considerably aids in increasing paint adhesion. It does not, however, form an actual coating on the metal surface. Any breakthrough in the subsequent paint film will permit

underfilm corrosion to proceed. Grades of Deoxidine are available for application by brush or swab, hot and cold dip, or hot spray.



Iron Phosphate

Iron phosphating processes are extensively used in the chemical prepaint treatment of appliances such as water heater shells, ranges, washers, dryers and other *white lines*. These processes will produce excellent paint-bonding films on the metal and retard or prevent underpaint corrosion. Duridine®, ACP's iron phosphating process, is a combination organic soil cleaner and iron phosphate coating material. Both the cleaning and coating operations take place in the same bath. Duridine and other iron phosphates do not lend themselves to brush-on application, are primarily designed for spray type equipment of four or five stages. But several dip installations are successfully operating today by inclusion of an alkali precleaning stage.



Zinc Phosphate

ACP Granodine® is an example of this type of chemical prepaint treatment process, the type now being used to treat steel in the automotive industry, and predominantly specified for steel ordnance and military items. This process forms a coating which offers the ultimate in paint adhesion promotion and vastly augments the corrosion resistance of subsequent paint films. Zinc phosphate materials are extremely flexible as to method of application—can be applied by brush, dip or automatic spray equipment. In a typical dip or power spray system, the stages would be alkali clean, water rinse, zinc phosphate treatment, water rinse, and acidulated final rinse. If the metal has considerable areas of rust or scale, an acid pickle is advisable following the alkali cleaning stage.

On zinc surfaces, the zinc phosphates perform a rather unique function. They act as a barrier against chemical reaction between the applied paint film and the zinc surface. This effectively prevents blistering of the

paint and early breakdown of the film. This is in addition, of course, to the improvement of paint adhesion and the retarding of underpaint corrosion. ACP Lithoform® is specially designed for use over zinc surfaces and finds wide application as a prepaint treatment for ornamental zinc die castings, refrigerator liners, and on most galvanized work requiring painted finishes.



Amorphous Phosphate and Chromate

These coatings are the films produced by the ACP Alodine processes and similar ones on aluminum surfaces. They have met with wide acceptance in the prepaint treatment of venetian blind strips, refrigerator liners, aluminum heat transfer units, aircraft sheet metal assemblies, and many other items fabricated from aluminum. The various coatings provide an excellent film for the promotion of paint adhesion and effectively prevent underfilm corrosion. As in the case of zinc, aluminum exhibits a tendency to chemically react with some paint systems. The Alodine processes develop a barrier film between the paint and the aluminum surfaces which prevents this reaction. The Alodines are extremely versatile materials that can be applied to aluminum surfaces by brush, hand spray, dipping, mechanical spraying, or roller coating equipment. Brush application is particularly well adapted to the processing of parts too large for simple dip systems or in manufacturing operations that do not warrant a tank setup. In dip, spray or roller coating application, the system usually consists of an alkaline preclean, a water rinse, the Alodine treatment, a water rinse, and an acidulated final rinse. Where the surface is heavily oxidized, a deoxidizer in the line is needed.

The major chemical prepaint treatments for metals have been covered briefly in this article. More complete information can be had by contacting an ACP sales representative or by writing us at Ambler, Pa.

Amchem Products, Inc. Ambler 33, Pa.



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For brutal, iron-jawed pressure, a steam shovel has few equals. Here, in this crushing grip, Weirkote's zinc coating undergoes a murderous test.

Yet at every crease, at every tortured angle of this crumpled mass, the zinc remains an integral part of the steel. There is not one sign of flaking anywhere!

No wonder strenuous forming operations such as lock seaming are child's play, for Weirkote can be worked to the very limits of the steel itself!

No wonder parts fabricated from it require no painting, plating or redipping to guard against corrosion. Weirkote parts can be stamped, drawn or spun well in advance of use, and stored without danger of rust.

And NOW, Weirkote is treated to inhibit wet storage (white oxide) stain.

Why not find out what Weirkote's benefits can mean to you?

Free Weirkote Booklet! Send for all the facts on Weirkote. Write Weirton Steel Company, Dept. R-6, Weirton, West Virginia



**WEIRTON STEEL
COMPANY**

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a division of

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(Right)—One of the five vending banks, which dispenses coffee, candy, ice cream, milk, cigarettes, and cigars, easily provides employees with a refreshing snack at Pesco Products Div., Borg-Warner Corp. (Lower right)—A Dairy-O-Matic milk vending unit converted to a cold, canned soft drink vending unit at the Cuyahoga plant of American Steel and Wire Div., U. S. Steel Corp.

IN GREATER CLEVELAND, there are but a few companies which are not served by a vending machine. They are used extensively in industrial firms, and it is not unusual to find a coffee machine, cigarette vending machine, or a candy and soft drink vending unit in the commercial offices of many Cleveland firms.

There are some 37,000 vending units in operation in the city. The telephone directory lists some 30 to 35 companies

gross sales in Cleveland

for 1957 were \$21,500,000

of the \$2 billion national mark —

Cleveland market now testing soft drinks in cans



Vending machines in Cleveland

actively servicing these installations. Vending sales for 1957 surpassed the expected \$2 billion mark, nationally, and Cleveland totalled gross sales of approximately \$21,500,000. The major part of this business was handled by the following five companies: Industrial Vending Co., 10217 Superior; Ace Cigarette Service Co., 7505 Carnegie Ave.; Canteen Co., 4301 Train Ave.; Charles Vending Co., 20710 Miles Ave.; and Cup Vending Co. of Ohio, 12520 Euclid Ave.

A leader in the industry

Leading the parade is Industrial Vending Co., featuring a full line from freshly-brewed coffee to nuts. A partial list of the companies served by Industrial Vending include American Greetings Corp., American Steel and Wire Co., Case Tech, Chrysler Corp., Cleveland Transit System, Electric Controller

Div. of Square D Corp., Harris-Seybold Co., Industrial Rayon Corp., National Carbon Co., Nela Park Div. of General Electric Co., Ohio Bell Telephone Co., Pesco Products Div. of Borg-Warner, Reliance Electric and Engineering Co., Sherwin-Williams Co., Weatherhead Co., Western Reserve University, and White Motor Co.

At Industrial, new developments in machine design, products, and machine application are checked in its own testing laboratories. New units are pre-tested as to performance, sanitation, quality control, and efficiency.

Cleveland's vending market tests soft drinks in cans

Soft drinks in cans, vended through specially-designed can vending units, are being sold in the Cuyahoga Works plant of American Steel and Wire Div., U. S. Steel Corp. This is one of many such

tests of canned soft drinks being conducted throughout the country. United Food Management Services, Inc., a Cleveland organization operating a wide-range employee food service in thirteen states, employed Industrial Vending Co. to install and service these



canned beverage vendors. In the Cleveland area, where United operates the cafeterias and canteens at American Steel and Wire's plants and offices, United Food supervisors work directly with Industrial Vending in supplementing restaurant operations with a variety of vending services.

Use of canned drinks increasing

It is reported that the use of canned soft drinks in other steel operations located outside of Philadelphia and Chicago has shown a marked degree of success.

Three brands of soft drinks are offered to the Cleveland market in the new canned vending units, providing a selection of four flavors each. On the national and regional market there are some 25 to 30 companies engaged in canning soft drinks.

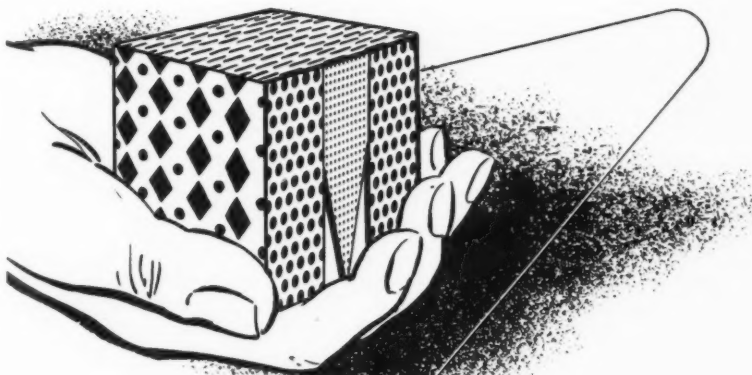
A leading manufacturer of vending units for dispensing canned soft drinks is Pneumafil Corp., Charlotte, N. C. Units located in Cleveland are the new Pneumafil model which holds 200 twelve-ounce cans in vend position and pre-cools twenty cans at a time. This unit is equipped with a coin mechanism to receive nickels, dimes, and quarters, and make change automatically. The can feeder is basically a gravitational drop actuated by delivery release solenoid upon insertion of coin and selection of flavor. A can opener, which sterilizes itself after being used, is located at the front of the machine.

BREAKDOWN OF VENDING UNIT PRODUCT SALES

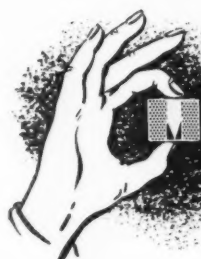
The following is an approximate picture of the 1957 sales by 37,000 vending machines in Cleveland:

Total sales — \$21,500,000	
4,700 candy units	\$ 2,500,000
6,000 cigarette & cigar units	10,000,000
10,000 chewing gum units	300,000
1,500 coffee & hot beverage units, over	2,000,000
1,000 cookie & cracker units	450,000
200 fruit juice units	100,000
400 hot food vendors	500,000
200 ice cream units	650,000
9,200 bottle & cup vending units (soft drinks)	4,000,000

These nine major categories account for about 92 per cent of the vending machines in use in Cleveland and 95 per cent of the vending industry's income. The remaining income is derived from other vending units which serve milk, pastries, sandwiches, handkerchiefs, combs, work gloves, bobby pins, and numerous other personal and impersonal products.



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The Strato Flight scale . . .

its design and engineering

AN MPM STAFF FEATURE

easy-to-read, and safe to stand on, were features
uppermost in minds of designer-manufacturer team

BATHROOM SCALES historically have been large, cumbersome, unwieldy instruments which took up too much space in the average bathroom and, unless there existed a real need for the product, there was little desire on the part of the consumer to make the purchase. It had never reached a point of being a desirable household appliance until the size was brought down to where it could be used in the average bathroom without taking up too much space or being an eyesore.

Borg-Erickson Corp., Chicago, developed a small compact scale for this purpose. Although they had created a desirable size to the item, and did increase the popularity of the bathroom

scale as a household appliance, they still had not made the final step, which was to employ good design in the product. About five years ago they made the first step in that direction and employed Banka Mango Design, Chicago industrial design firm, to develop a scale that would put it in the category of a decorator accessory to the bathroom, as well as being a useful appliance. The "Strato Flight" scale is an attempt to move away from the pack by developing a new design concept.

Analyzing all scales, Borg-Erickson became aware that they had designed themselves away from much of the utilitarian qualities of the product, and had made it more difficult to use. Mainly,

foot room had been sacrificed for design. To remedy this, the scale was turned sideways with the result that, with very little additional overall area, they could design a scale with considerably more foot space and, at the same time, enlarge the diameter of the dial. It also allowed more space for the numerals and, consequently, larger, more-readable numerals were the result. In addition to using larger numerals, they were able to eliminate the use of the magnifying lens and, therefore, have a product with more readable numbers without distortion.

New mechanism

Sales outlined their idea for engineering a new scale that would provide: more standing area on the platform; larger numerals on the dial, making it easier to read from any position; a more compact unit, without sacrificing accuracy; safety; and a less cumbersome appearance. It also had to be of 300-pound capacity.

With this in mind, their engineering department, headed by M. Walter Johnson and his assistant, Richard Ciborowski, went to work to mechanically design a scale as conceived by Sales, bearing in mind that they had certain limitations from a mechanical equipment standpoint.

Due to the request for larger numerals on the dial, it meant that, in order to incorporate this feature into the scale, they would not use a magnifying glass but would, instead, increase the diameter of the present dial by approximately 33 per cent. Being made of metal, it meant more weight per dial and more room on the interior of the scale to allow this dial to orbit. It was at this point that Engineering conceived



♦ Easy-to-read numerals, undistorted due to absence of magnifying glass, and large platform are features of Strato Flight bathroom scale.

the idea of turning the mechanism sideways and relocating the indicating mechanism to coincide with the center point of the four fulcrums or contact points of the weighing mechanism.

In order to swing the additional weight of this dial, Engineering had to redesign the backlash action so that there would not be a slow or cumbersome movement and, by the same token, would not have too quick an action which would cause damage to the rack and pinion. This was accomplished by the redesign of springs.

The next problem that was tackled was stability, which meant that there must be sufficient support underneath the extended platform to give a sense of security to the individual who was going to stand on it. This was accomplished by the extension of lower blade supports which run crossways under-

neath the platform and, in order to incorporate this change, Engineering would have to know how the scale was going to look from an appearance standpoint. It was then recommended that Sales select an outside designer for the style concept.

Mechanically, the engineering department had worked out most of the problems that had confronted them, incorporating the features in the scale that Sales presented, and which were all on paper in the engineering department before the request for styling was turned over to the industrial designers.

Coordinate design to manufacturing

After receiving management's approved selection of the designer's concept of appearance of the scale, preliminary models were constructed in wood because of a request that the industrial

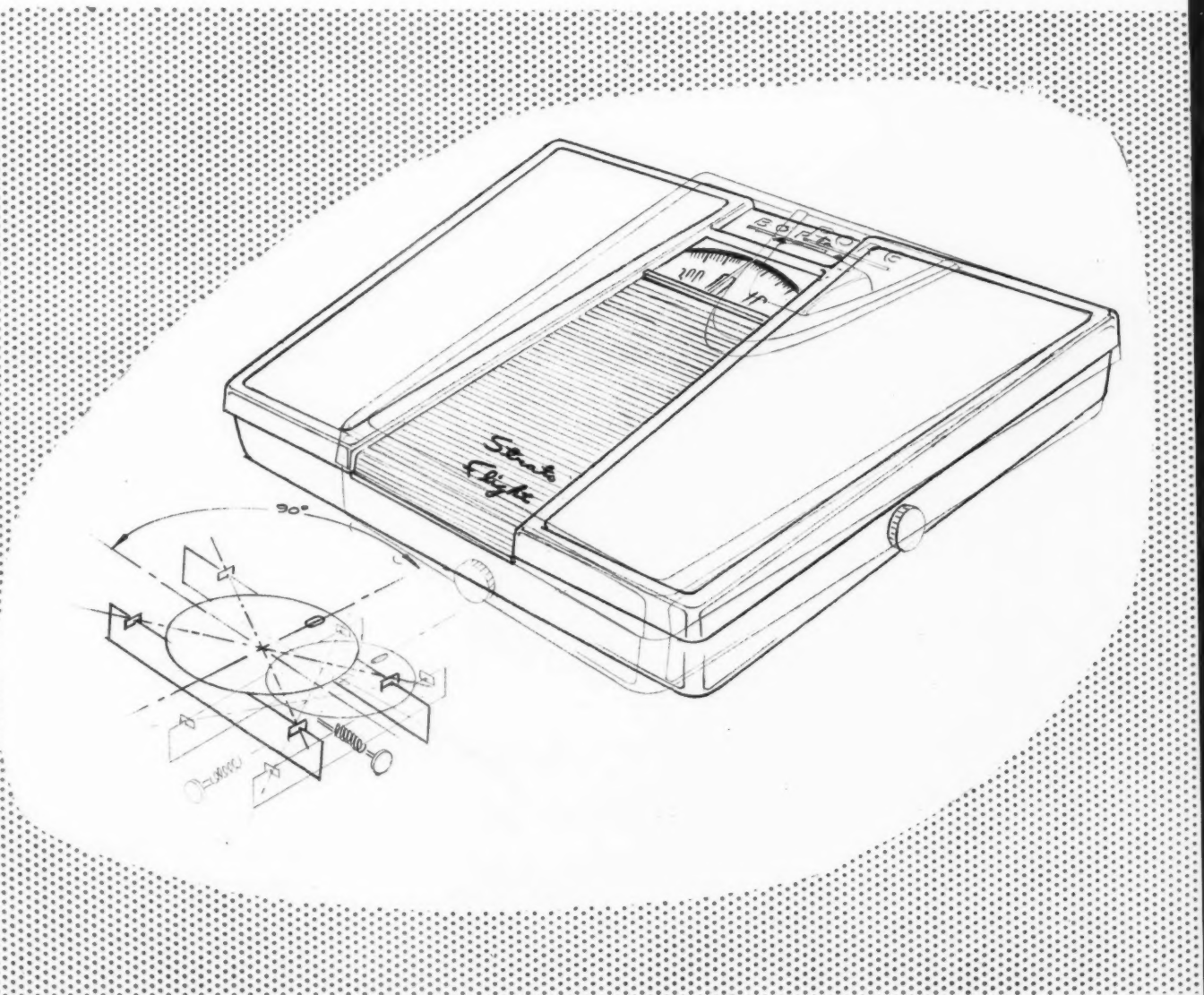
designers stay within dimensional limitations. Limitations on fixtures, and availability of mechanical equipment, also had to be considered as pointed out previously.

Inasmuch as the industrial designer could not offer any assistance on the inner mechanism of the scale, all conferences were confined to outside appearance design and, from these conferences, an agreement was reached between designer and Engineering to start tooling without sacrificing definition of design.

Based on the designer's concept of appearance, it was then decided that two different size lower supports would be needed for stability, one long and one short.

The bottom shell, or scale case, was designed for tooling by the engineering

to Page 52 →





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Painting 15,000 parts on one shift

combined circulating system and electrostatic application provides for fifteen "speed changes" of color within eight hour shift

TURCO MANUFACTURING Co., St. Louis, Mo., is a major manufacturer of playground equipment. Working closely with merchandise testing labs of some of the large mail order houses, the company decided to improve the quality of the finishes used on its products.

Problems

(1) Lack of uniform coating, using the flo-coat system. To get sufficient paint at the top of some gym set parts—such as legs and head bars, which are pieces of 2-inch tubing between 7 and 10 feet in length—the result was an excessive amount of paint at the bottom. Paint film thickness at times varied as much as 0.5 mil at the top of the tubes to 3.0 mils at the bottom.

(2) Formerly, the equipment was painted only in red and green. Because the product is a "toy," and must be visually attractive to youngsters, Turco wanted to add another color—yellow—to the gym set. There wasn't sufficient room to add another flo-coat booth, and plant executives felt that the third color would have slowed down production too much to be practical.

(3) Color change requirements were as high as fifteen times in an eight hour shift. Allowing a conservative five minutes for color change, this means a loss of an hour and 15 minutes a day, or 27 work days a year for changeover.

New re-circulating system installed

Turco devised a paint distribution system with three pumps for the three colors used regularly: red, yellow and green. From each drum containing a

color, there is a circulating line. A line leads from the bottom of the drum to the intake side of the pump, and a line also leads to the discharge side back to the top of the drum. There's a simple shut-off valve on the discharge side of the pump, and between the discharge side of the pump and shut-off valve a T leading to a vertical steel pipe was inserted. This means that when the valve is opened, paint will re-circulate from

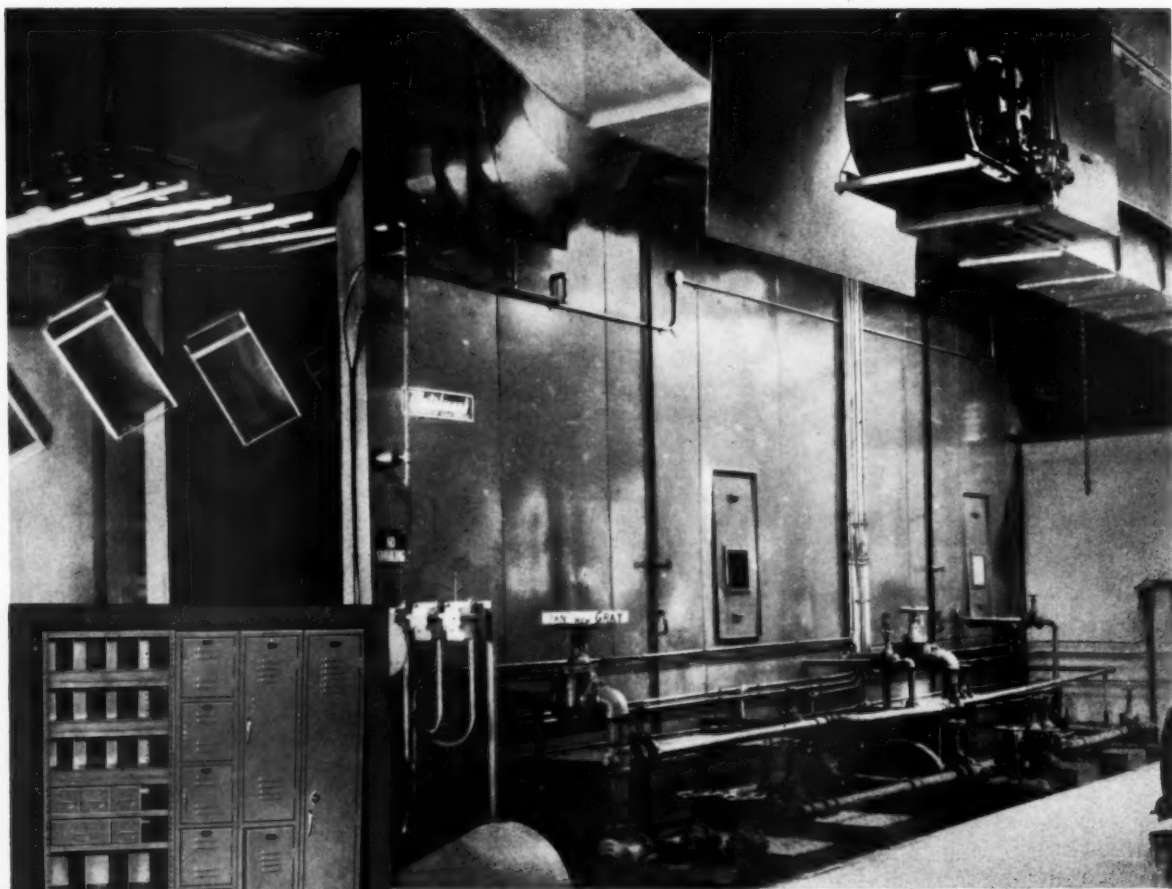
drum to pump and back into the drum. When the valve is closed, paint travels up the vertical stand pipe. The stand pipe is tied into a control valve which can be positioned to either color. From the discharge side of the control valve, a polyethylene hose leads into the electrostatic reciprocating disc.

All three pumps work simultaneously. As an example, when painting green, to Page 61 →



A variety of small parts—as well as 2 inch tubing up to 10 ft. in length—are painted with a pit-mounted reciprocating disk, which has a stroke capacity of 14 feet. The workholders rotate on the conveyor as the parts make a loop around the 25-inch reciprocating disk. Small parts are loaded on conveyor from a platform built above floor level.

PHOTO COURTESY RANSBURG ELECTRO-COATING CORP.



Large illustration shows parts entering two-color flow-coater.

ANDREW WILSON'S* NEW METALWASH FINISHING SYSTEM WITH TWO-COLOR FLOW COATER BOOSTS PLANT PRODUCTION FOUR TIMES!

Inset shows superior finish produced by Metalwash Systems.

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BAKE OVENS
DEGREASERS

*A detailed article on this money-saving installation appears in October Metal Products Manufacturing. Reprints are available on request.

Increased efficiency at every stage of finishing operations makes the difference at the Andrew Wilson Company, Lawrence, Massachusetts, manufacturers of quality steel lockers, parts bins, shelving and filing cabinets. Installation of a Metalwash paint finishing system at the company's new plant also enables Wilson to improve product quality—at substantial savings in labor and operating costs!

Product parts are cleaned and surfaced with inert iron phosphate in *one* operation by a 2-stage Washer-Phosphatizer. A 2-color tandem Flow Coater eliminates production slow-downs for paint color change. Precise control of solvent vapors in the 50-foot Flow-Out Tunnel assures positive paint uniformity prior to curing. Floor space is conserved by use of an outside roof oven. The entire 600-foot Metalwash system is completely automatic—eliminating former costly hand operations.

Whether you are planning a new system, or renovations to existing facilities, a survey by Metalwash specialists can determine ways to help you improve your painting operations . . . reduce your product finishing costs. Write today to request your Metalwash Finishing Survey, at no obligation.



INDUSTRIAL DIVISION
METALWASH MACHINERY CORPORATION
ELIZABETH 4, N. J.

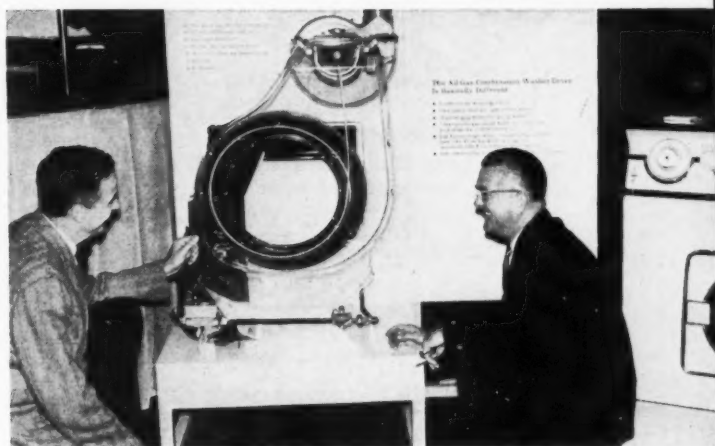
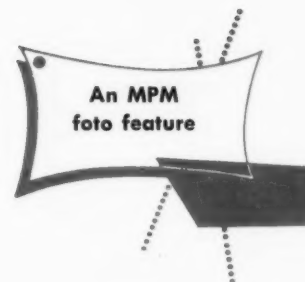
AGA presents "Parade of Progress"

Atlantic City convention attracts over 6,000; here are some of the new products and developments at the show

The American Gas Association presented a well received show which was planned to inform and educate. Each item exhibited had to meet the requirement of being a "new and significant technical development since October,

1956." Changes in style, size, appearance, and other similar refinements and improvements to currently-available gas equipment were not included.

EXCLUSIVE MPM PHOTOS



(Upper left) — John J. Fannon Products Co. displayed a new method of lighting industrial-type infra-red burners by electronic controls. An air and gas mixture burns on the surface of the ceramic burner at about 1,650° F. (Above) — Whirlpool's gas combination washer-dryer was well exhibited with this demonstrator. (Lower left) — Cabinet manufacturer uses some of the latest in built-ins to sell his product to the show visitors. (Below) — The Norge gas refrigerator with automatic ice maker makes its debut.





AGA Gas Multimatic Wall, introduced recently, demonstrates the convenience of pull-down burners.

Parade of gas progress

An interesting new idea was shown by Philco with their gas washer-dryer.



Explaining the features of the new Waste King gas incinerator.



Another of the glittering kitchens here displaying Tappan built-ins.

The Republic Steel kitchen display.



PHILCO ... another user of PERMA-VIEW WINDOWS



ROUND



SQUARE



RECTANGULAR



TRAPEZOID

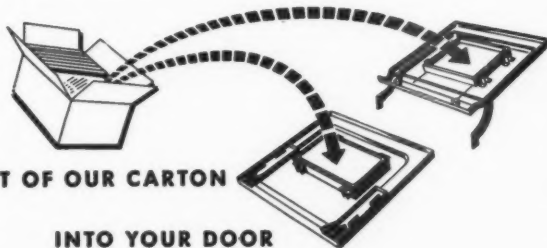
We can manufacture any shape, any size, any thickness to meet your engineering requirements. Alternate methods of attachment may be used.

PHILCO CORP.

— one of the

73 leading range manufacturers
using

PERMA-VIEW oven-door windows



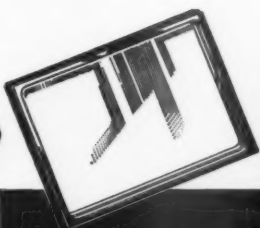
OUT OF OUR CARTON

INTO YOUR DOOR

Philco Corp. has been a satisfied user of PERMA-VIEW windows for a number of years. Now 72 other leading manufacturers are using "the window you can see through always."

The strong, steel-encased, double-pane PERMA-VIEW window incorporates the finest quality heat resisting glass. It is mechanically sealed to prevent infiltration of vapors and to eliminate "fogging." This "No-Fog" window meets the constantly growing demand for "visible baking."

The PERMA-VIEW window is pre-engineered and comes to you ready for immediate installation in your range, "out of our carton into your door." Let our specialized production lines serve as a part of your sub-assembly facilities. Phone or write us for complete details on the ease and economy of adding this sales feature to your new ranges.



MILLS PRODUCTS INCORPORATED

1015 WEST MAPLE ROAD

WALLED LAKE, MICHIGAN

New method of spray phosphoric acid pickling

claimed suitable for one-coat porcelain enamel on steel and for electroplating oxide coating, etc.

A NEW METHOD of spray phosphoric acid pickling has been developed which is claimed to offer: (1) continuous sludge-free operation with constant solution composition, (2) a high rate of pickling with uniform and consistent metal loss, and (3) a more economical process.

It is conceded that continuous operation of spray phosphoric acid pickling in the past has presented such difficulties as precipitation of ferric phosphate sludge. It is stated, however, that the new process eliminates the difficulties and, in addition to removing the required amount of metal to obtain a chemically-clean surface, the phosphoric acid imparts a thin phosphate coating which enhances the formation of desirable oxides during pre-firing or the firing of titanium-containing porcelain enamels.

It is necessary to control both the spraying conditions, acid concentration, and the ferrous ion concentration of the pickle on a continuous basis to obtain best results. Therefore, engineering of equipment must receive careful attention to minimize introduction of air into the spray chamber. It is necessary to operate at a concentration of 20-30 per cent acid to prevent excessive sludge formation.

Through the use of this process, it has been determined that phosphate coatings may average 1-2 milligrams of PO_4 per square foot. Single coat enamels applied after pre-firing gave satisfactory (270°) torsion performance.

It is reported that operating a spray phosphoric acid pickle can be competitive with sulphuric acid, when all factors affecting cost are taken into consideration. Phosphoric acid is, of course more expensive than sulphuric, but the usage is claimed to be lower per pound of iron removed, due to the ion exchange method.

This new spray phosphoric acid pickling method is claimed to give a uniform degree of etching, and to enable users to calculate the desired quantity

of metal loss in connection with subsequent metal finishing.

In use for one-coat enameling

One of the major manufacturers of household ranges has done extensive

work with this process in preparing steel for the application of one-coat porcelain enamel — cover-coat direct to metal. Thousands of parts have been field tested and, according to reports to MPM, not a single failure has been reported on the "field-test products."

It is anticipated that this process may be in full production in a major plant soon after this report appears in print.

While information on the appliance plant is currently confidential, a more complete report on the new phosphoric pickling method may be obtained from the supplied by writing on your letterhead to **Special Projects Editor, MPM, York St. at Park Avenue, Elmhurst, Ill.**

New vending machines unveiled at St. Louis convention

THE ANNUAL CONVENTION of the National Automatic Merchandising Association was held in St. Louis Nov. 2-5. Two new types of vending machines were unveiled that promise to boost the future business of the vending industry.

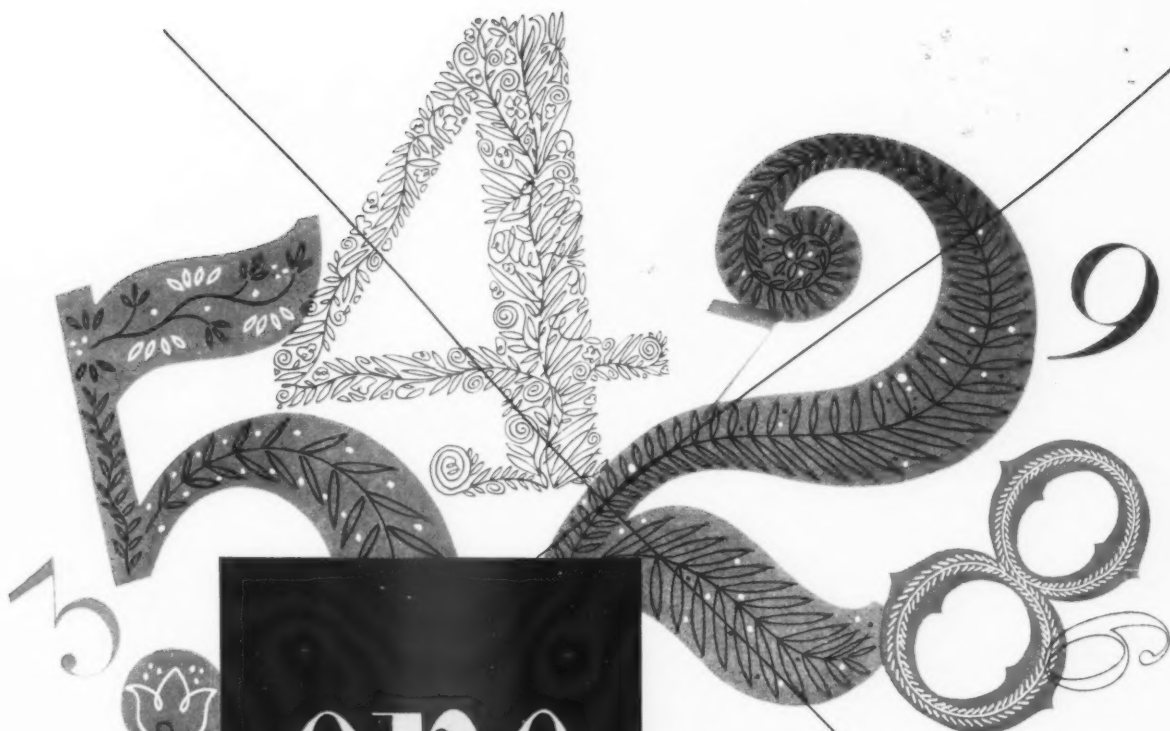
One of these machines is a ticket vender with provision for the selection of up to 30 tickets. Demonstrated at the NAMA show was the selection of 30 commuter tickets for a suburban railroad. A customer at the machine could make selection by rotating a knob to his station choice, depositing an amount

of money up to \$1.00, pressing a selector dial, and receiving his ticket plus his change. Connected to the machine was a dollar bill detector that will handle paper currency.

Also shown at the convention was a "multi-product vender." A "customer" can insert a dollar bill, then press any one of eight separate buttons located at window boxes in a panel nearby which contains samples of butter, milk, eggs, steak, frozen food, bread, coffee, and a soap product.

The paper currency detector is shown here in a clear plastic case attached to the multi-product vending machine. A wide range of products can be dispensed such as meat, coffee, milk, frozen food and bread.

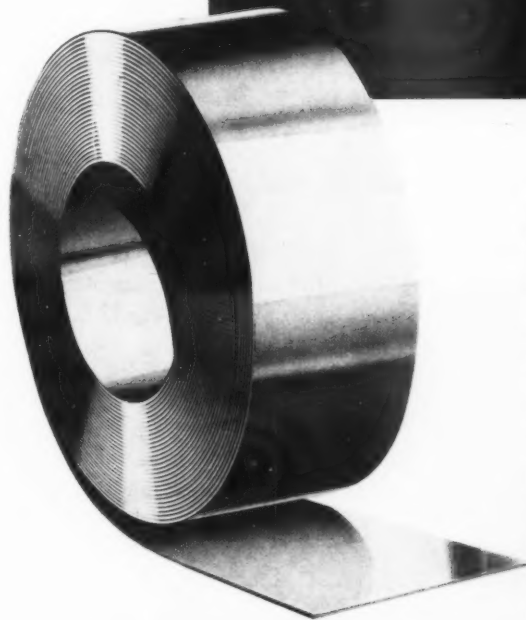




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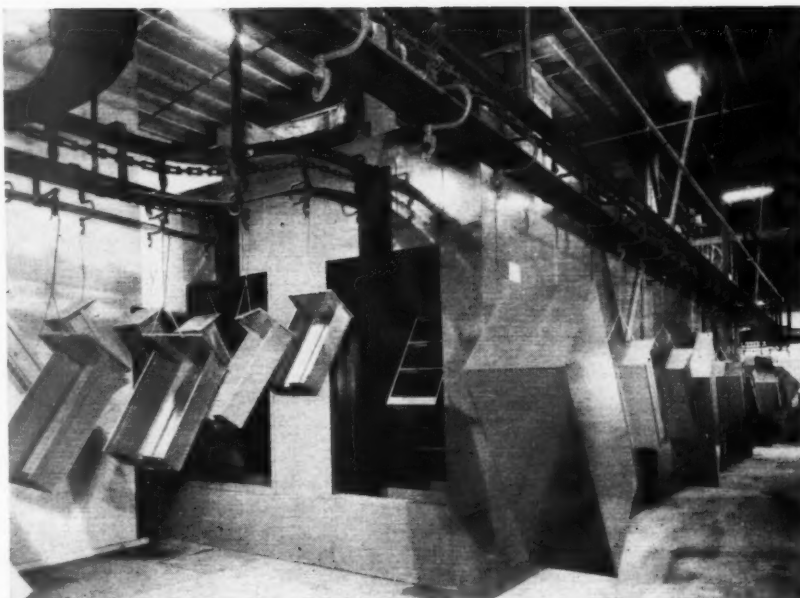
"THE GLIDDEN UMBRELLA"
of protection combines comprehensive
technical service and custom-formulation
of product finishes for all industry.

DESIGNED TO HANDLE 50,000 pounds daily in production, a semi-automatic finishing system has been installed in the new 37,000-square foot plant of the Art Steel Company, Inc., in Los Angeles, Calif. The system finishes steel office furniture ranging in size from a 15 x 28½ x 30 inch two-drawer file cabinet to a five-drawer cabinet measuring 18 x 28½ x 57½ inches.

The system was planned to provide maximum production with minimum manpower, and conserve floor space. Finishing operations require only four paint sprayers and three operators working under two supervisors. The system occupies 6,000 square feet of floor space, or roughly one-sixth of the total plant area.

Three-stage washer

After cleaning to remove shop dirt and grease, component parts are loaded on hooks on an overhead conveyor which travels 500 feet, moving at the rate of 8 to 10 feet per minute. Hooks



Oven where spray-painted finish is baked on and bonded to metal surface. Conveyor is feeding parts into oven (left) and out of oven (right) toward take-off point.

PHOTOS COURTESY DESPATCH OVEN COMPANY

New finishing system aids expansion program for office furniture manufacturer

Spray booth, where each part is sprayed from opposite sides as it travels through on the conveyor. One of the booth's two water curtains is seen at left.



are spaced two feet apart. The first process consists of a three-stage, five-minute washing cycle in tanks in a section, 46 x 11 x 7 feet, where parts are immersed in the first stage at 180°, followed by a plain water rinse and chromic acid at 180°.

Next is a dry-off process in an oven 6 x 11 x 26 feet where the production units bake about three minutes at a 400° F. temperature. From here the components are carried to opposed-type spray booths where two sides are sprayed at once. Each side location utilizes an air-replacement system and water curtain. Final finishing is a bake-oven treatment. Making two passes through the 50 x 10 x 11 foot convection type gas oven at 350° F, the components are baked for 15 minutes. They are then unloaded from the conveyor and reassembled. The finishing process takes just under one hour (on the average) to complete.

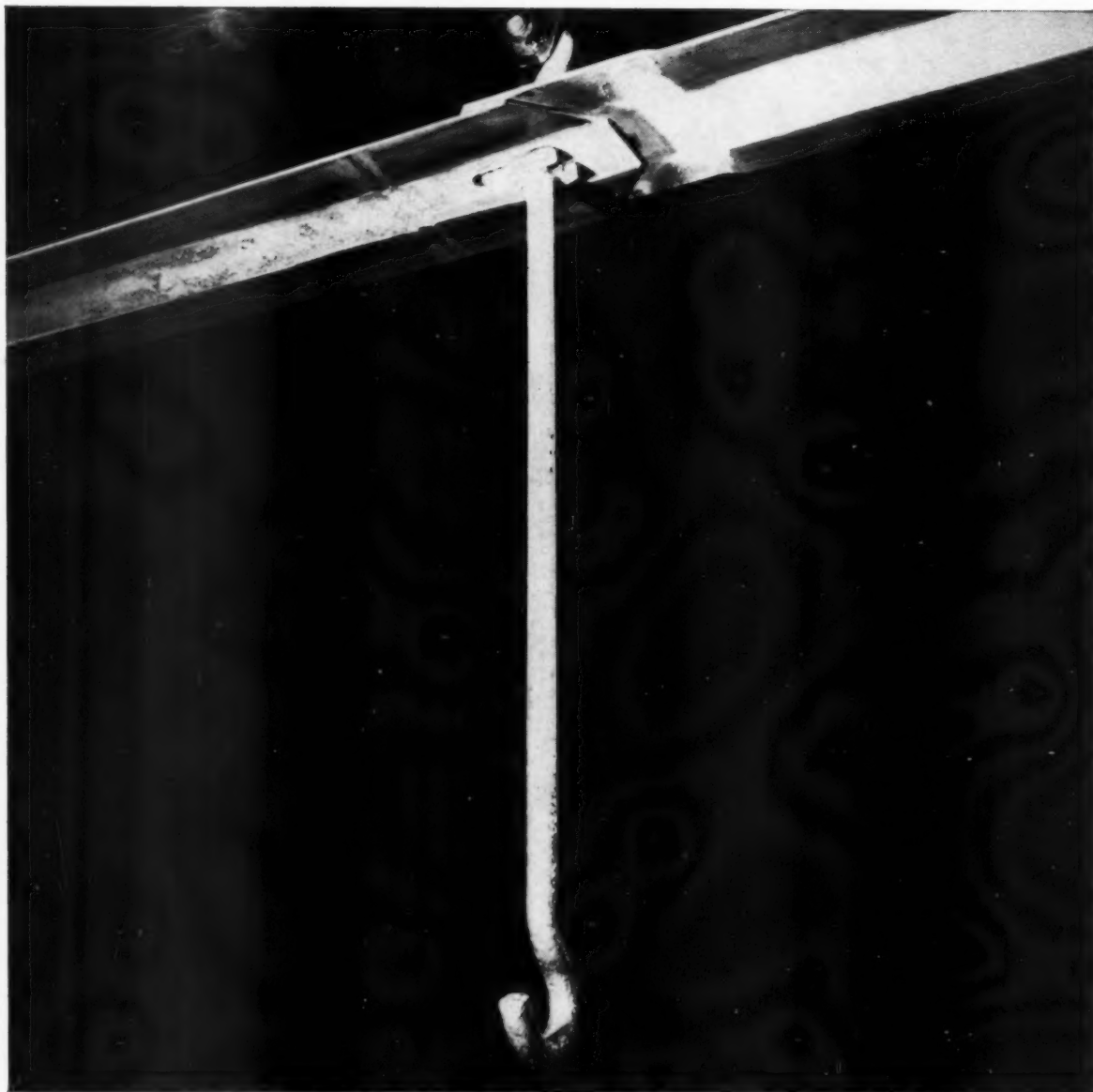
Many factors are dependent on the efficient operation of the finishing sys-

tem. In the competitive office furniture market, any extended work stoppage means immediate loss of dollar volume, shipment delays, loss of customer confidence, and possible loss of customers.

Cost of the California unit was \$100,000, company executives said. A similar finishing system installation has been ordered for the firm's New York City manufacturing facilities, to make a total of three such systems employed by Art Steel for manufacture of their more than 1,200 items of "Steelmaster" office furniture and equipment.

The Los Angeles plant, handling production for the 11 western states, was planned to meet the increased demand for steel office furniture.

The Art Steel Company is one of the old time companies manufacturing office equipment, and has been in the field for the past 38 years. Present management consists of Joseph Burger, president, Irving M. Levy, treasurer, and Arthur Burger, secretary. Main offices are located in New York City.



Typical 6-year Inconel drop rod has never had attention. Ready for more 1550°F service at U. S. Porcelain Enamel Co., Los Angeles.

Do your drop rods hold up like this for 6 years? Wrought Inconel drop rods do

This drop rod served five years in a 1550°F enamelling furnace, holding fixtures and ware. Then it was transferred to a modern straight-through furnace for another year, where it's still at work.

Notice tightly adhering scale and the absence of any necking-down. It's ready for more years of service.

Take a tip from U. S. Porcelain Enamel Co., Los Angeles—where this

and other wrought Inconel* nickel-chromium drop rods gave 2-3 times more life than rods of other alloys.

Why Inconel drop rods hold up so long


First: Wrought Inconel drop rods have excellent high temperature strength—handle heavy loads at burning heat, without stretching.

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See how Inconel burning tools can lower your costs! Write Inco for big, illustrated booklet — “Keeping Costs Down as Temperatures Go Up.”

Inconel burning tools are available from your fabricator. *Registered trademark

The International Nickel Company, Inc.
67 Wall Street  New York 5, N. Y.

INCO NICKEL ALLOYS

Modern practices in porcelain enameling

new pickling and testing methods, plus latest ideas and techniques, featured at forum

AN MPM STAFF REPORT

INTERESTING NEW DEVELOPMENTS brought the interest at the last PEI Shop Practice Forum to a new high. Good weather and good attendance helped make the 20th annual forum one of the most successful ever held. This was the 10th meeting of the Porcelain Enamel Institute held at the University of Illinois in alternating with The Ohio State University. Arrangements at the Urbana campus were ably handled by Dr. A. I. Andrews head of the Department of Ceramic Engineering.

Those deserving the accolades of all who attended for putting on the excellent program were: L. C. Farrow, Whirlpool Corp., chairman; and J. B. Willis, Pemco Corp., vice chairman of this year's forum committee.

The first day's session was centered on the subject of base metals for enameling. In the first paper, P. A. Reynolds, U. S. Steel Corp., gave a brief account of the manufacture of sheet steel for porcelain enameling. He pointed out the various check points that the steel manufacturer makes to insure the production of as high quality enameling sheet as possible. Among the properties that the manufacturer strives to attain are: flatness, formability, good surface texture, sag resistance, and ability to be enameled. Such steps as pouring time and temperature are carefully controlled in molding the ingot to control the physical and chemical properties of enameling sheet. In slabbing, for instance, a complete record of the steel grade, weight, heat number, slab weight, etc., are kept for each ingot being processed. In cold

reduction, where the steel is brought to final desired gage thickness, preliminary thickness measurements are made "on the run" by X-ray, and the final thickness is measured with a contact micrometer.

Sag versus temperature

Dr. R. F. Patrick, Pemco Corp., spoke on sag characteristics of steel vs. temperature, in the next paper. In it, he pointed out that, as temperature rises, the elastic limit and strength of the steel decreases. Also important to note is that, the higher the content of carbon in the steel, the greater is its tendency to sag during firing. According to tests run by Dr. Patrick, results showed that, in the temperature range of 1,350° F., there was not as great a difference between the sag of enameling steel with low carbon content and cold rolled steel as there was at higher temperatures. Therefore, it should be possible to either lower the gage of enameling steel used in the range of 1,350° F., or use cold rolled steel to effect economy.

Resistance welding of sheet steel

An authoritative talk on the resistance welding characteristics of sheet steel was given by Dr. W. D. Doty, U. S. Steel Corp. Among the facts brought out were that the heat for fusing the steel depends on the electrical resistance of the steel. The resistance of steel increases as the carbon content of the steel increases.

Dr. Doty explained that the best weld is made just short of the point of expulsion. Expulsion is spurting out of over-

heated steel in the weld area, resulting in a poor weld. This is usually caused by too long a period of contact with the welding electrodes. One indication of expulsion is a shower of sparks during welding.

Symposium on metal preparation

Phosphoric acid pickling was the topic presented by F. W. C. Jones, Parker Rust Proof Co.

Harold C. Wilson, Vitreous Steel Products Co., presented a number of valuable ideas on pickling procedures, including adjustments for various soils. In the removal of grease or grease compounds, points to check carefully are: 1. Use of a good commercial cleaner that is easily saponified at a concentration of about 6 oz. per gallon at a rolling boil; 2. Cleaner should have plenty of surface action relative to the metal being cleaned. 3. Frequent change of the cleaning solution is a must. Intervals for changing vary from plant to plant, depending on the type of soil, the steel, and the rate of production; however, a good danger signal is when the cleaning job decreases in quality.

Test for dry draw application

The pressing need for a quick reliable test for measuring dry draw lubricants could be answered by the method presented by J. A. Schiefferle, General Electric. Using the weighted rubber ring assembly from the PEI Test Bulletin T-16, "Test for Determination of Nickel," a titration method was developed for checking the application directly on



the coated stock.

The weighted rubber ring is placed directly on the spot to be measured. Three to four drops of methyl orange indicator are placed in the ring and stirred with a glass rod to dissolve the dry drawing film. While still stirring, 1/100 N hydrochloric acid is added dropwise from a 5 cc. measuring pipette with the aid of a "propipette" until the indicator end point is reached. The volume of acid used is then multiplied by the appropriate factor to express the application in grams per square foot of area.

The factor for the particular material being used is obtained from a small sample which has been thoroughly dried at 200° C. before weighing. Comparison weight factors should be obtained from the original material, and the compound on the metal itself. In the latter determination, a sample of the steel is taken, dried to 200° C., and weighed accurately before and after application.

Results of this test were the improvement of spray application, elimination of downtime at the presses due to breakage, decrease in the amount of time for recoating, and a check for determining whether the steel, dies, or lubricant are at fault when breakage does occur.

Loaded beam stress measurement

Don Bowman, Chicago Vitreous Corp., presented a simple method and apparatus for determining the stress developed by cover coats. Using recommended 20-gage steel strips that have had all burrs removed, a controlled amount of ground coat is applied to each side of each sample. After the samples have been fired, cover coat is applied at the rate of 18½ grams per square foot on a dry basis. Each test sample is then set on two knife edges on a level surface, and the weight in grams necessary to bring the center of the sample down to a third identical knife edge is a relative measure of the stress developed in the cover coat after weight corrections are made for the amount of cover coat on each sample, since there usually are slight variations from sample to sample.

Good reproducibility is reported from operator to operator, even though the test depends on the judgment of the eye in determining just the point at which the sample touches the knife edge.

Transistorized furnace tester

An improved version of the "Bozsín Box" for measuring the temperature of each zone in a continuous furnace was described by its chief developer, Mike Bozsín, the Ferro Corp. The new transistorized version has two thermocouples,

and weighs just 100 lbs. as compared to the original box which weighed 800 lbs.

Measure of flatness for architectural panels

F. E. Havens, Armco Steel Corp., described a simple instrument for measuring flatness of steel. The instrument is not available for general use, but a request for information to Armco will bring a reply. The instrument is designed so that it will measure the slope of any area on a panel.

Adhesives for Laminated Panels was the title of a talk delivered by George J. Schulte, Minnesota Mining and Mfg. Co. High strength adhesives with shear values above 1,000 psi are: nitrile rubber-phenolic resin, epoxy resin, and vinyl-phenolic types.

Effect of automation on cost reduction

Interesting observations on the effect of automation on cost reduction were presented by A. S. Karrer, General Elec-



Fourth session, seated L. to R.: King, Ohio State; and Karrer, GE. Standing, L. to R.: Erwin, Westinghouse; and Baker, Frigidaire.

tric. He pointed out that automation alone does not result in overall savings in every case. Automation means cost reduction, but Karrer does not consider automation as the complete answer. Some operations do not lend themselves to automation without considerable investment in research of materials and equipment, and these costs can very well mean the success or failure of an automatic process on a cost reduction basis. "When considering automation," Karrer said, "research the project well."

"As an example, several years ago, we installed a semi-automatic system to apply cover coat enamel to flat panels using a curtain type flow-coater. All preliminary investigations indicated that considerable cost reductions would be possible in both material and labor—

even after several months of production operations on pilot equipment. We did realize the expected reductions in material costs but our labor costs increased about 25 per cent. Recently we have had to forsake the automatic process and return to manual spraying operations because of a change in panel design and the fact that, to date, we have been unable to satisfactorily apply cover coat enamel direct to steel by the flow-coat method of application. Neither of these problems were anticipated when the automatic system was adopted and neither problem could be foreseen several years ago," Karrer said.

1400° F. porcelain enamels

H. R. Spiers, of Pemco Corp., pointed out how the 1,400° F. enamels can be used effectively on refrigerator liners, range flatware, architectural panels, and lighting reflectors. Care has been taken to maintain as nearly as possible the same good working properties that the higher firing frits possess.

Cover coats have been developed in the 1,400° F. range that are alkali-resisting for use on home laundry equipment, high in reflectance for use on lighting fixtures, and smelted-in colors for use on refrigerator liners.

One of the most important characteristics of the 1,400° F. cover coats is low stress. Warp values from 0.02 in. to 0.04 in. are normal with many of the 1,400° F. cover coat frits. This property results in less warpage, reduction of chippage, and keeping spalling to a minimum.

Repairing defects in ground and cover coats

The most common repairs to be made are to chipped enamel, enamel damaged in the bisque, ware damaged in handling, large boil from a weld, or damage or ding in a raw part, according to J. H. Forwith, Westinghouse Electric Corp.

If a chip is through the ground coat, Forwith recommended grinding out the chipped part, feathering the edges, then spraying groundcoat on the damaged area, building slightly beyond the white. After drying, the ground coat is rubbed off to approximately five thousandths higher than the cover coat. After the part is fired, the area is stoned with a smooth stone and, if the job is properly done, one coat of white will suffice to make this a good repair. If damage is through the cover coat only, the same procedure can be followed by using the white spray build-up, instead of ground coat.

More photos on Page 59 →

HERE'S A NEW LINE



SURE TO BE A LEADER AMONG 1959 PRODUCTS!

Manufacture This Easily Merchandised Slide Projector:
ADD A PROFITABLE PRODUCT TO YOUR LINE!

CHECK THESE NEW AND IMPROVED COMPETITIVE FEATURES:

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- Complete slide accessibility throughout cycle

500 watt projector, 9½" wide, 10" long, 6¾" high. Aperture temperature runs 160 degrees at 70-degree room temperature; dimmer control reduces temperature to 100 degrees with 300-watt brilliance. Instantaneous changing of slides eliminates wiping action or period of darkness. Self-contained adjustable automatic timer; or conventional timer may be plugged in. Full remote control, feed and review operation. Enclosed metal trays may be used within the projector's open trays; 11"-long tray holds 200 cardboard slides; 6"-long tray holds 100 slides. Quiet cooling and pre-heating system design maintains accurate focus. Slides completely accessible for turning, removal or additions in receiving tray, aperture or collecting tray. Projector is ideal for comparing, sorting, arranging and editing slides as well as for professional and lecture showings, in addition to wide consumer market.

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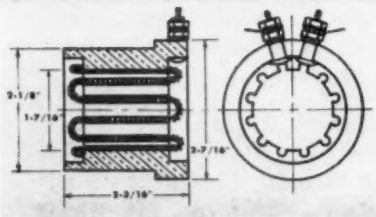
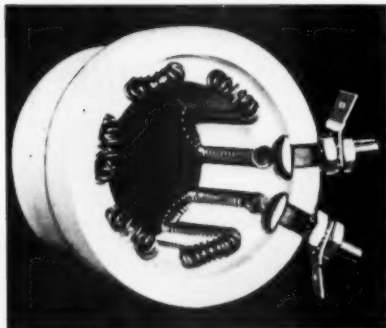
Tubular Heating Element Suitable for Small Appliances

A tubular heating element, Model H-1101, and suitable for a wide range of applications, has been announced. Suggested applications include heat guns, hair dryers, space heaters, hot food venders, photo print dryers, and other products where air is to be heated while flowing through a tube or nozzle. The unit illustrated was made for use in an electric hand dryer.

An exclusive feature of the design is the location of the heating element, which is threaded through circular-shaped grooves on the inside of a Steatite tube. This provides for an unobstructed flow of air, and for a high increase in heating efficiency, since the heat is reflected from the inner walls to the center of the tube. The porosity-controlled Steatite tube provides further efficiency because of its low moisture absorption, which reduces current leakage to a minimum.

The new heating unit, which can be controlled thermostatically, is furnished in ratings from 500 to 2,000 watts at 115 volts. It can also be furnished to operate on 220-volt current if required. Dimensions of the tube, as made for the hand dryer, are shown on the drawing beneath the photo. Other sizes in this basic design can be provided to suit specific applications.

Full information can be obtained by writing on company letterhead to Dept. MPM, Tuttle Electric Products, Inc., Kirkland, Ill.

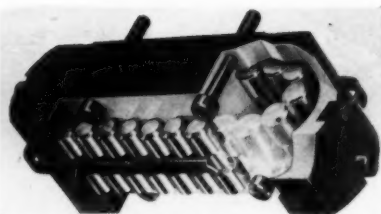


Improved Mounting Method for Bearing

Four through-holes accept socket head cap screws to provide a simplified mounting method for anti-friction way bearings. The new development is designed to give unlimited travel, constant accuracy, and reduction of feed power, according to the manufacturer.

For further information, contact Dept. MPM, Tycho Mfg. Co., 561 Hillgrove Ave., La Grange, Ill.

(See top of next column)



Plastic Respirator

A plastic respirator for protection against dusts, pneumoconiosis-producing mists, and chromic acid mists, and approved by the Bureau of Mines, has been announced. Weighing only 2.1 ounces, the Air-Raider, as it is known, introduces a new respirator design which is said to provide greater functioning filter area which, in turn, increases filter life. The filter is a treated-wool electrostatic type.

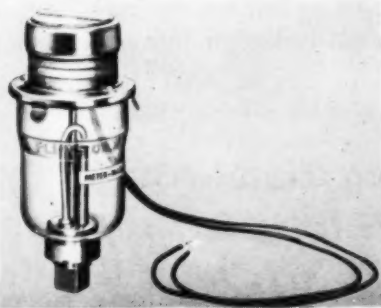
For further information, contact Dept. MPM, Welsh Mfg. Co., 23 Magnolia St., Providence 9, R. I.



Lubricant Dispenser

A precision lubricant dispensing instrument, called the Meter-Matic Oiler, is said to assure longer wear and less frequent breakdown of equipment requiring lubrication at controlled intervals, with consequent step-up in production time. The unit, attached to the machine, is driven by a synchronous motor and adjusts to meter lubricating oils automatically, from a drop every 30 seconds up to a drop every 10 minutes.

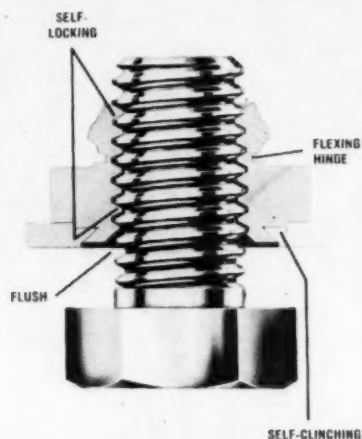
For further information, contact Dept. MPM, Plews Engineering Dept., 701 S. Seventh St., Minneapolis 15, Minn.



Self-Clinching Nut

An all-metal, self-locking, self-clinching nut for sheet metal fastening, that is said to combine two essential functions in one light-weight low-cost unit, has been announced. The design employs a clinching ring which, when squeezing pressure is applied, causes the sheet metal to flow around a back-tapered shank, securely locking the fastener in the sheet with a flush fit on the reverse side.

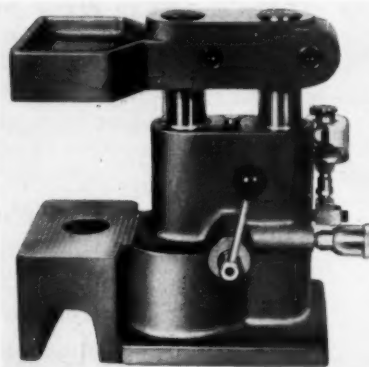
For further information, contact Dept. MPM, Penn Eng. and Mfg. Corp., Doylestown, Pa.



Air Jigs

A line of air jigs, which are said to be versatile, are made in four types, with each having a large range of sizes. The "OA" type has two rises, both standard and high rise, to accommodate a large variety of parts. Two types are made to clamp downward by lowering the top plate, which is raised or lowered by the plunger movement, and two styles clamp the part upward to the top plate, which is stationary. Operation is said to be practically noiseless, exhaust being muffled by a silencer.

For further information, contact Dept. MPM, The Cleveland Universal Jig Co., 13404 St. Clair Ave., Cleveland 10, Ohio.



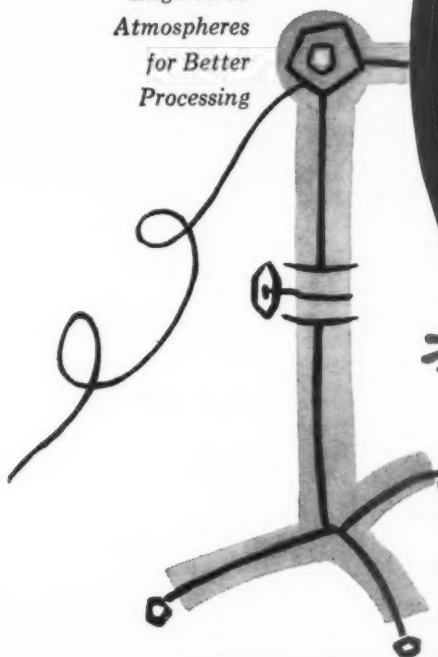
Low Cost Direct Lift Valve

A solenoid valve that is only 3 1/4 inches high, and called "Tiny," has been introduced. Designated Type TT, it is a single-seated, angle-type valve machined from brass bar stock with a stainless steel plunger and point assembly. With direct lift operation, (main valve ports open instantly when solenoid is energized) the unit is designed for applications where a wide range of pressures is coupled with relatively little flow. It may be used for air, gases, water, oil, steam, and other media not harmful to brass. Pressure range is 0 to 400 psi (no pressure needed to

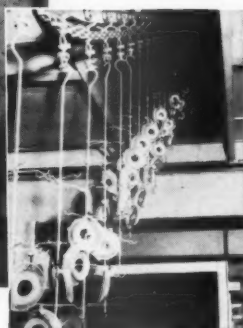
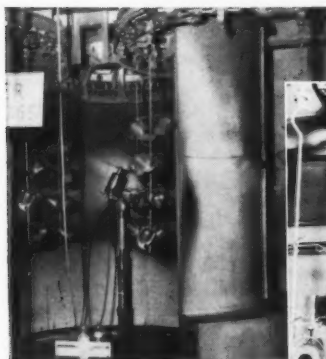
More New Supplies and Equipment on Page 63—>



Engineered
Atmospheres
for Better
Processing



...with all operations carried on
in a plant conditioned
with filtered, tempered air



Beauty Parlor FOR 60 CHAIN SAW PARTS

1st Treatment
BRUSH AND CHEMICAL CLEANING
2nd Treatment
SELECTIVE MASKINGS
3rd Treatment
SELECTIVE AUTOMATIC
ELECTROSTATIC PAINTING

4th Treatment
HAND TOUCH-UP PAINTING
5th Treatment
FLASH OFF TUNNEL
6th Treatment
23 MINUTE BAKE AT 300°F

This 6th Treatment is the key step in this flexible paint finishing system, recently designed and installed by Ross Engineers for the Homelite Division of Textron, Inc., at its new Gastonia, N. C., plant. It is in this carefully engineered baking oven with its interlocking controls that the paint in four different colors is securely anchored to the aluminum or magnesium surface and given its attractive durability. Here is the well-known Ross 'Engineered Atmospheres for Better Processing' being put to use.

Industrial Paint Finishing Systems has been the business of Ross Engineers since the early twenties. We design, manufacture and install. If it's a metal surface you want paint-finished, why not discuss your requirements with a Ross Engineer? His experience and broad knowledge of the subject should be invaluable.



THE ROSS GROUP OF COMPLEMENTING SERVICES

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Andrews and Gauditch Division, Boston
Ross Engineering of Canada Limited, Montreal
Ross Midwest Fulton Corporation, Dayton
Carrier Ross Engineering Company, Ltd., England
John Waldron Corporation, New Brunswick, N. J.
Hunting Technology, Mountaintop, New Jersey

J. O. ROSS ENGINEERING

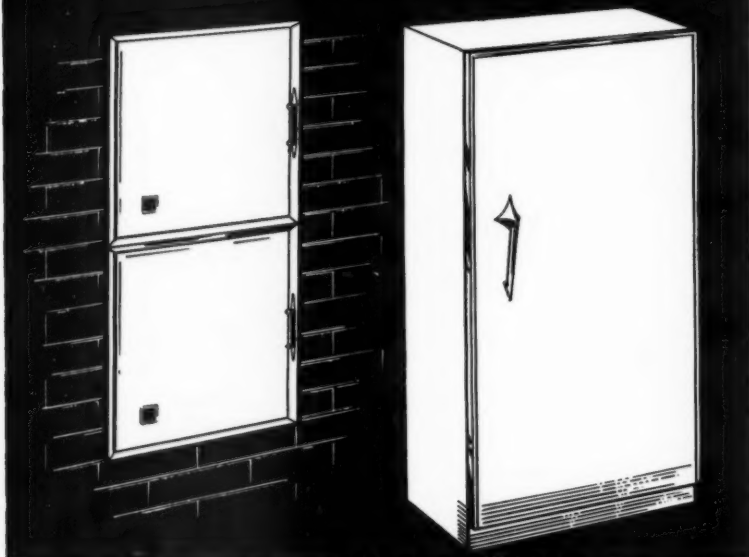
Division of Midland-Ross Corporation

444 MADISON AVENUE, NEW YORK 22, N. Y.

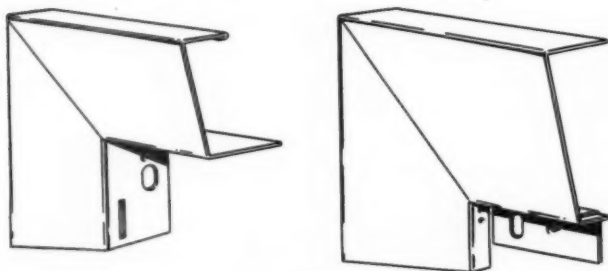
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Simple additions to standard toolings often custom tailor standard shapes at little tool cost.

Write Today for "Plan Book of Metal Mouldings"

Pyramid Mouldings Inc.

5365 WEST ARMSTRONG AVE., CHICAGO 46, ILL.
NEW YORK... CALIFORNIA

Editor's mail

→ from Page 10

Wishes paint setup data

Gentlemen: Shortly we expect to make some changes in our paint spray setup. Will you kindly supply literature and engineering data covering electrostatic painting.

Rolf A. Zurwelle, Sales Manager
Perfect-Line Mfg. Corp.
Hicksville, N. Y.

Information on vending machines

Gentlemen: Please send the addresses of the following companies so we may obtain brochures on the merchandising machines as advertised on pages V-6 and V-7 of the May, 1958 publication of your magazine. They are: Vend Rite Mfg. Co.; Selective Vending Co.; Apco, Inc.; U. S. Vending Machine Corp.; and Rowe Mfg. Co., Inc.

Lawrence F. Scheiter
Helpes—Selfee Laundry, Inc.
St. Louis, Mo.

Addresses of the above companies have been sent as requested. Eds.

Favorably impressed

Gentlemen: Our copy of the October issue of METAL PRODUCTS MANUFACTURING has been received, and all of us concerned with Porcelain Enameling on Aluminum have been very favorably impressed with your articles, and comment has been very enthusiastic. In fact, we have had one inquiry from up North for porcelain enameling work, which was the result of seeing our name in your magazine. No doubt we will receive more.

F. W. Taylor, Jr.
California Neon Products
San Diego, Calif.

Dunnage free cars

Gentlemen: Thank you for the excellent article on dunnage free cars in September, 1958 issue of METAL PRODUCTS MANUFACTURING. We at Carrier are beginning to use DF cars on a trial basis to formulate costs and procedures.

However, I feel there is much to be learned regarding the use of this equipment from both a technical and practical aspect. You noted in the article that you have further information available. I shall be grateful if you will send me two copies of the booklet noted.

W. P. Montgomery
Carrier Corp.
Syracuse, N. Y.

Help Fight TB



Buy Christmas Seals

TINY CONVENIENCE OUTLETS

give your portable appliances, radios, power tools, electronic test gear greater utility and ease of use.

Easy to install — takes absolute minimum of space.

EYELETS, RIVETS OR SPOT WELDS RIGHT TO CHASSIS



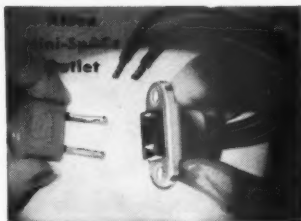
Simple panel punch-out



Drops into place fast



Minimum space back of panel



SOLDER TAB Mini-SpAcE Outlet — with solder tabs UL approved for 15 amps @ 125V or 10 amps @ 250V. Specify #402ACE.



PRE-WIRED Mini-SpAcE Outlet — with leads automatically attached to each contact and assembled into molding. #402ACC with 16 gage wire UL approved up to 1100 watts. #402ACL with 14 gage wire, UL app. for 15 amps @ 125V or 10 amps @ 250V. Specify part number and lead lengths.



PARALLEL-WIRED Mini-SpAcE Outlet — with two leads automatically attached to each contact and assembled into molding. Ideal for parallel wiring of multiple outlets. Specify #402AC2C for 16 gage leads, #402AC2L for 14 gage leads. Give part number and lead lengths.



GROUNDING — Simply slip Alden Grounding Adapter Plate over any of above Alden Mini-SpAcE outlets and adapt it to accommodate the UL 3-prong, parallel blade, grounding plugs. Add "G" to part numbers above (e.g. #402ACEG) or order separately as #CS402ACG.

Order by number — Samples sent free

12174 N. MAIN ST., BROCKTON 64, MASS.

ALDEN PRODUCTS COMPANY

Miniature Dial Light Sockets



Detachable Line Cord



Miniature Fuseholders



FACTS from MEYERCORD

for latest information on plant and product marking
... ask for these brochures ... free!

PLANT MAINTENANCE MARKING KIT for Water, Heating and Air Conditioning Systems

Now in use by leading manufacturers and service organizations. Provides standardized identification, absolute legibility, and permanency at remarkably low cost. Kit includes 474 signs assorted over 59 operational subjects. Easily applied in seconds.

LUBRI-CAL MARKING KIT Takes the Guesswork Out of Lubrication

An important preventive maintenance program. The proper frequency of numerals, letters and instruction nameplates for identifying lubrication points and required lubricants on plant, production and operating equipment. Permanent, tough, oil-resistant transfers.

DECAL MARKING METHOD

Decal marking for "difficult surfaces"

Heat, abrasion, weather and many of the new industrial surfaces are deadly enemies of most product markings. But not to new, improved Meyercord Decal Markings—types C, G, J and H (heat resistant). Ask for new brochure.



the MEYERCORD co.

Dept. C-350, 5323 West Lake St., Chicago 44, Illinois

WE ARE PROUD TO ANNOUNCE
TO THE METAL PRODUCTS INDUSTRY
THAT WE HAVE COMPLETED THE
INSTALLATION OF OUR
PORCELAIN ENAMELING PLANT

**GENUINE PORCELAIN ENAMELING ON
ALUMINUM AND ALUMINIZED STEEL**

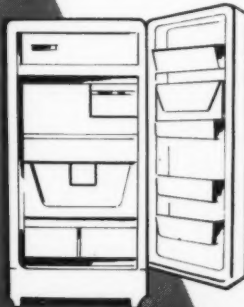
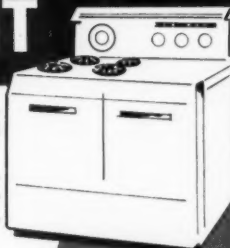
All architectural and builders' requirements available
in all colors, including pastels — (in a matt, semi-matt
or gloss finish!!!)

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NEW

INDUSTRIAL LITERATURE

Bulletin Describes Range Timers

A new bulletin on stud mounting range timers—a combination fully automatic range timer and a 1 hour electric timer and an electric clock and a 4 hour timer has just been issued.

Photos and descriptions of the lubelless synchronous motor-powered timers are presented—products on which these timers are now being used are listed.

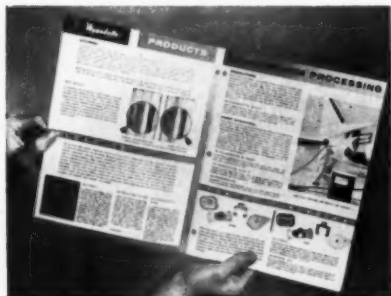
A scale diagram of panel opening details is shown. Specifications and optional features are also listed. The former includes switch rating, motor lead lengths, and description of set knobs and front mount for both models, UL and CAS approved. Dial and set-knob colors, bezel finishes, and motor lead lengths are among the optional features. Write Dept. MPM, Lux Clock Mfg. Co., Waterbury 20, Conn.

Aluminum Processing Folders

Products and cleaning procedures for aluminum processing is the subject of a new colorful 11" x 17" folder.

Etching, cleaning before anodizing, desmutting, paint stripping, barrel finishing, and deoxidizing are among processes described.

Products featured are for decorative



and deep etching, scale and sludge control; also a non-etching heavy duty soak cleaner; a desmutter and deoxidizer; and phosphatizer for paint preparation and brightening.

For copies of the booklet "Works Wonders with Aluminum," and further information on products for aluminum processing, write Industrial Department, J. B. Ford Div., Wyandotte Chemicals Corp., Wyandotte, Mich., or Los Nietos, Calif.

Folder Describes

New Electrocleaner

A new, non-etching reverse current cleaner, is described in a folder recently published by a manufacturer of metal treating and cleaning compounds.

The folder points out that extensive field testing of the new compound has demonstrated its ability to remove soils without darkening the zinc or changing the color achieved in preceding buffing operations. Rejects are fewer. Another advantage described by the folder is the material's usefulness in cleaning not only zinc, but brass, copper, and steel, all in the same solution.

The folder, F 10466, gives the application procedure recommended for the use of Oakite Composition No. 195. It's available from Oakite Products, Inc., 157 Rector St., New York 6, N. Y.

New Bulletin Describes Plating Machine

A new four-page bulletin now available describes new single row plating and processing machines. Complete machine is illustrated and described with emphasis placed on the carriers, main frame and drive. Folder also illustrates and lists other types of machines for plating, etching and anodizing, pickling, phosphatizing, and related processes. Write Dept. MPM, The Meaker Co., 1629 S. 55th Ave., Chicago 50, Ill.

Plan Book of Metal Mouldings

Plan Book of Metal Mouldings for all products in all metals from a specialist in stainless steel is available in a well-illustrated booklet. Rings for washers, bezels for television, dinette trim and aprons, refrigerator kick plates and escutcheons are some of the many mouldings that can be made. For the booklet, write Dept. MPM, Pyramid Mouldings, Inc., 5365 W. Armstrong Ave., Chicago 30, Ill.

Surface Element Control Completely Described

A booklet is available which describes all electric surface element temperature controls, both from the standpoint of the user and for the range manufac-

turer. Said to be low in cost, the unit is easy to install because the compact control elements are electric. Any selected increment of temperature from 100° F. to 485° F. is reached quickly and then uniformly maintained, according to the manufacturer. For complete data, specifications, and installation drawings, write for Bulletin 576, Dept. MPM, King-Seeley Corp., Ann Arbor, Mich.

Laminated Plastics Described

A large and versatile family of laminated plastics, known as Insurok, is described in a newly-revised 12-page catalog. Several of the thousands of industrial applications that have been found, because of its combination of properties, are illustrated. Uses have been found in such areas as electricity, electronics, mechanics, textiles, chemicals, aviation, and transportation.

There is a comprehensive listing with descriptions of Insurok laminates which conform to NEMA (National Electrical Manufacturers Association) and military specifications, as well as special grades for specific applications.

Copies of the catalog No. 20.000.13 are available by writing to Dept. MPM, The Richardson Co., 2731 Lake St., Melrose Park, Ill.

Spray Booth Catalog

This catalog describes how this line of standardized spray booths save on assembly costs. Prefabricated parts bolt together to form a rigid, self-supporting structure. Wide selection of sizes and types. Ask for Spray Booth Catalog I-7000, Dept. MPM, The DeVilbiss Co., Toledo 1, Ohio.

Electrolytic Zinc-Coated Steel

A free brochure is available which describes the qualities of this company's electrolytic zinc-coated steel for both outdoor and indoor use. This zinc-coated steel reportedly will not peel or flake after fabrication. For complete information and the free booklet, write Dept. R-7, Weirton Steel Co., Weirton, W. Va.

Free New Bulletin and Solenoid Selector

A complete booklet describing the many applications of solenoids is available, along with a solenoid selector that quickly and easily matches a solenoid to a specific application. Applications include valve actuation, clutch operation, switch function, metering devices, shutter and damper control, and many other operations. For the free bulletin and solenoid selector, contact Metal Products Manufacturing, York St. at Park Ave., Elmhurst, Ill.



New enameling plant features automated aluminum line

AN MPM STAFF FEATURE

EXCLUSIVE MPM PHOTOS

A FEW YEARS AGO, the application of porcelain enamel on aluminum was being done, but usually in a small portion of the plant set aside from the main production line, and each process involved in the application was carried out with a "tongue in the cheek" attitude. Today, in the new plant of Vitri-Finish, Inc., City of Industry, Calif., the application of porcelain enamel on aluminum utilizes straight line, continuous equipment. A 140-ft. long, fully-automatic continuous production line accepts the aluminum straight from the pickling department, then turns it out ready for market. Human intervention during the actual enameling of the material is nil. The automatic controls

along this line are so precise that they guarantee even correct color matching between production runs accomplished at different times.

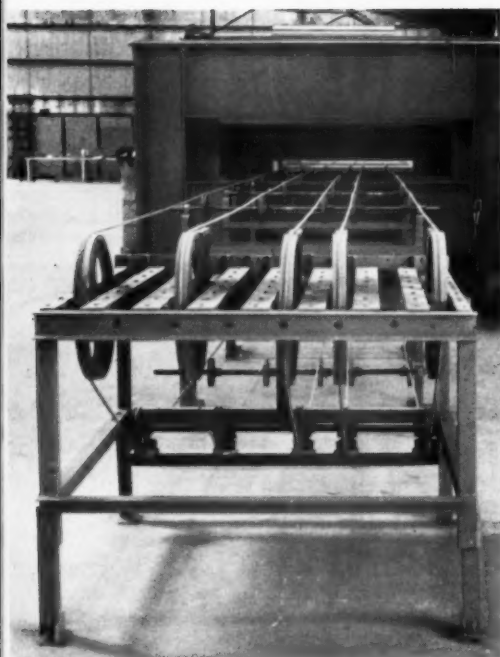
VitriFinish has been in business less than a year and is still expanding its

Robert Rodman, company president, checks the furnace instrumentation, which assures very close control of firing temperature.

EDITOR'S NOTE:

Photos appearing in this article were purposely taken at a time when the plant was shut down. Had pictures been taken while the plant was in operation, the conveyor, spray heads, and humidity chamber would have been obscured by the work, spray, or fog, with resultant poor photographic definition.

production facilities. Current plant area is 26,000 sq. ft., with an additional 26,000 sq. ft. being planned. A 4,000-sq. ft. office will supplement the new addition. Though porcelain enameled architectural aluminum, steel, and stainless steel are the main products at present, future plans include the production of other product lines. According to E. L. Prust, executive vice president and general manager, special attention will be given to the production of porcelain



Start of the new, fully-automated aluminum enameling line. Work is laid face up on the five-cable conveyor which carries it through both spray booths, the humidity chamber, and then automatically transfers it to the furnace conveyor.

enameled aluminum appliance components and enameled aluminum cooking ware.

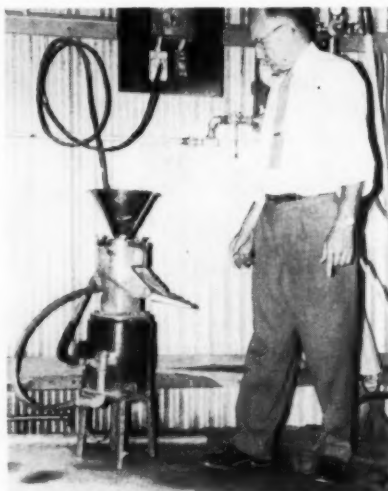
The new company has installed a steel and stainless steel line with conventional operations and equipment. This line consists of the conventional type of pickling equipment with the tanks capable of accepting architectural panels up to 14 ft. long and 72 inches wide. After pickling, the work is conveyorized, then passes through two 10-ft. facing spray booths so that it may be conveniently sprayed on both sides. The work then moves into a 20-ft. dryer where it is dried by excess heat from the line's box furnace. The 8-burner gas-fired box furnace will handle panels up to 6 ft. by 12 ft. in size, and may be operated at any temperature between 1,200 and 2,000° F. The laboratory, the high pressure hot water boiler system used to heat the pickling tanks, the milling department, and other standard facilities, serve both the aluminum and steel lines.

The aluminum line at VitriFinish is, however, radically different, and warrants a detailed description. Currently, three aluminum alloys, 3S, 61S, and 63S are being enameled. The products include aluminum moldings, expanded metal sections for use as sun shades or decorative coverings, and the large panel sections used in curtain wall construction. Many of the large panels are of built-up, honeycomb type, with the

honeycomb sandwiched between two sheets of aluminum. These honeycomb panels are bonded together with a thermosetting adhesive which makes them acceptable to the building codes established by the City of Los Angeles. The honeycomb construction makes these panels extremely rigid, and a panel 6 ft. long and 12 inches wide, when laid between two chairs, will support a heavy man with only slight deflection.

Cleaning equipment accommodates large panels

Production of these products begins in the metal preparation room. Each of the nine tanks in the aluminum line will accommodate panels up to 72 inches wide and 14 ft. long. The steps em-



E. L. Prust, executive vice president and general manager, inspects the mill used for ultra-fine grinding of frits after they have emerged from a conventional ball mill. These four fixed spray guns, mounted in the first spray booth, spray the underside of the work. These guns may be repositioned as required.

ployed in metal preparation in the order of their use are as follows: (1) alkaline cleaner; (2) cold rinse; (3) etch; (4) rinse; (5) deoxidizer; (6) rinse; (7) chrome conversion; (8) rinse; and (9) dryer.

Work is handled through the tanks with a monorail conveyor and company-designed frames into which the work is loaded. All heated tanks are thermostatically controlled, and a cross-spray is used on all rinse tanks to assure constant agitation. The room is completely ventilated and walled off from the plant proper.

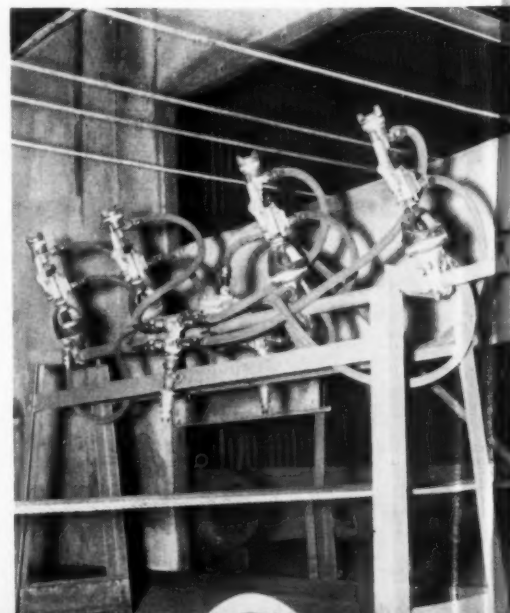
As indicated, a high pressure hot water system is used for heating the tanks. The boiler operates at 300°F.

and 65-70 psi pressure. It is a closed-type system so that no water evaporation occurs, and additive water is kept to a minimum. The boiler is fully automatic in operation and requires only routine maintenance attention. Tanks heated by this system can be brought to a boil within three hours, and a tank which has idled over night can be brought to temperature in about 30 minutes.

After pickling, the aluminum is ready for enameling, and is moved either by pallet truck or gasoline-powered tow motors to the beginning of the automated aluminum finishing line. The first conveyor on this line is an "open-type" conveyor, consisting of five 1/2-inch steel cables running on grooved pulleys. The work to be enameled is laid flat and face-up across the five cables, then passes progressively through two spray booths and a humidity chamber before it is automatically transferred to the furnace conveyor.

Humidity chamber between spraying and firing

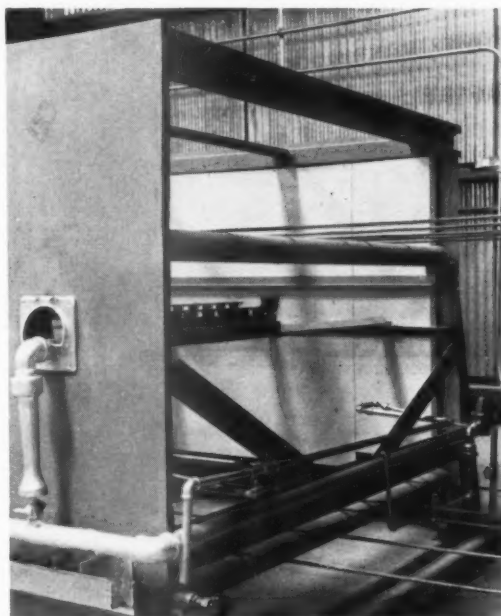
The first spray booth contains an automatic transverse spray machine with four spray guns. Stroke of the machine is adjustable up to 72 inches. This same booth contains four fixed spray guns mounted beneath the conveyor and pointed upward for spraying the back side of the work. The second booth contains a second automatic transverse machine. Beyond this second booth, the work moves through an 18-ft. long hu-





Howard Burlingame, plant manager, employs a color difference meter to check the color on a preformed and enameled aluminum architectural component.

Beginning of the 18-ft. long humidity chamber just beyond the second spray booth. Two spray nozzles fog the entire length of the humidity chamber. The applied slip is kept moist by the fog until it reaches the furnace conveyor.



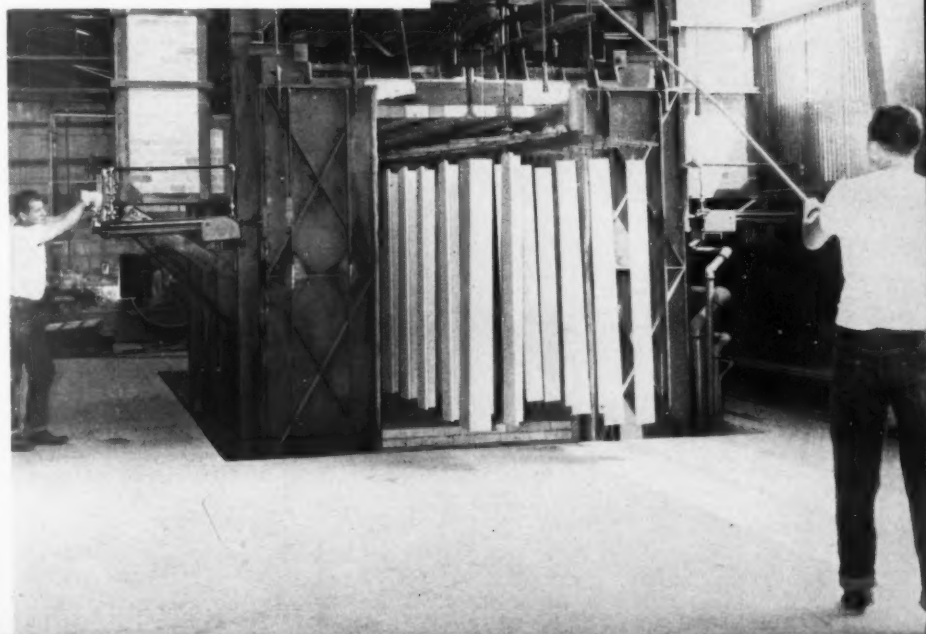
humidity chamber which keeps the applied enamel moist until it reaches the furnace conveyor. Two fog nozzles located at the entrance end of the humidity chamber eject a fine fog along its entire length.

At the furnace end of the humidity chamber, the work transfers automatically from the cable conveyor to the stainless steel wire mesh furnace conveyor belt. The furnace is a custom-built 40-ft. continuous-type, heated by imported infra-red quartz-type heating tubes which, in conjunction with the furnace instrumentation, maintain a constant burning temperature of 1,000° F., plus-or-minus 5° F. The furnace will accept parts up to 60 inches wide and 20 inches high. The precision heat control possible with this furnace permits color matching on production runs which are fired at different times. Beyond the furnace, the work is ready for shipment. A minimum of personnel effort is required in the operation of this line. The work must be loaded on the initial conveyor, received from the furnace conveyor, and requires a certain degree of vigilance over the line while it is in operation.

Very complete laboratory facilities are maintained for both the steel and aluminum lines. In fact, these facilities emphasize the fact that the company is prepared to accept all types of enamel-

ing work as the opportunity occurs, and despite any specification requirements it may impose. A complete miniature production line has been set up, including a spray booth, dryer, and precision high-temperature furnace. A full range of color oxides is kept available at all

A load of enameled steel architectural components is being loaded into the box furnace used on the steel line. This furnace will accept parts up to 6 ft. by 12 ft. in size. Firing temperatures can be varied between 1,200 and 2,000 degrees F.



times. A jar mill setup for grinding experimental batches is available, as well as high precision analytical balances for determining the exact contents of the batches. An electronic color difference meter is used for color comparisons. Numerous drawer-type bins in a large workbench, each labeled with its contents, keep all laboratory ingredients readily at hand at all times.

Special mill for fine grinding

The millroom at VitriFinish currently contains four ball mills of 150-lbs., 300-lbs., 500-lbs., and 600-lbs. capacity. A 2,000-lb. ball mill will soon be installed, along with four more smaller mills duplicating the aforementioned sizes. High-density balls are used for grinding, and all the mills are water-cooled. Of special interest in the millroom is a mill for additional and finer grinding of the frits after they emerge from the ball mills. Here again, some proprietary innovations exist, but in general, the special mill will be used for producing aluminum enamel's of drastically-reduced fineness.

After a tour through the new Vitri-Finish plant, one is left with a vivid impression. . . . Here is a plant built to anticipate the future. This impression was supplemented by the remarks of Howard Burlingame, plant manager, who said, "In planning the plant's equipment installations, every effort was

to Page 68 →

METAL PRODUCTS STATISTICS

a current report on available production, shipment and sales figures for important products in the appliance and fabricated metal products manufacturing field

	1958 (Units)	1957 (Units)	Change
Gas Water Heaters.....September	230,600	215,500	+ 7.0
Jan.-Sept.	2,003,700	1,951,300	+ 2.7
Gas Ranges, Built-In.....September	24,600	21,000	+17.1
Jan.-Sept.	158,600	143,600	+10.4
Gas Ranges, Free-Standing...September	162,300	171,100	- 5.1
Jan.-Sept.	1,178,800	1,339,400	-12.0
Gas Furnaces.....September	107,300	93,900	+14.3
Jan.-Sept.	585,400	520,000	+12.6
Gas Fired Boilers.....September	19,400	15,400	+26.0
Jan.-Sept.	86,300	76,700	+12.5
Gas Conversion Burners.....September	31,200	29,500	+ 5.8
Jan.-Sept.	111,400	118,200	- 5.8
Electric Refrigerators.....September	294,800	265,200	+11.1
Jan.-Sept.	2,306,400	2,627,500	-12.3
Electric Freezers.....September	121,200	79,000	+53.5
Jan.-Sept.	835,900	745,300	+12.1
Electric Ranges, Free Standing...September	68,200	84,500	-19.3
Jan.-Sept.	573,900	700,200	-18.0
Electric Ranges, Built-In.....September	54,100	40,300	+ 9.5
Jan.-Sept.	372,300	313,800	+18.6
Electric Storage Water Heaters...September	74,000	69,800	+ 6.0
Jan.-Sept.	611,500	587,000	+ 4.6
Electric Dishwashers.....September	43,000	36,700	+17.2
Jan.-Sept.	288,600	292,100	- 1.2
Electric Food Waste Disposers...September	56,200	53,500	+ 5.1
Jan.-Sept.	435,500	397,100	+ 9.7
Combination Washer-Dryer...September	19,806	20,158	- 2.0
Jan.-Sept.	106,145	134,253	-21.0
Washers, Automatic & Semi...September	311,848	298,875	+ 4.0
Jan.-Sept.	1,950,552	2,131,704	- 8.0
Washers, Wringers & Others...September	111,225	93,858	+19.0
Jan.-Sept.	654,186	694,043	- 6.0
Electric Dryers.....September	110,008	115,126	- 4.0
Jan.-Sept.	508,691	573,285	-11.0
Gas Dryers.....September	48,725	51,347	- 5.0
Jan.-Sept.	221,933	252,629	-12.0
Vacuum Cleaners.....September	299,618	302,869	- 1.0
Jan.-Sept.	2,345,346	2,372,893	- 1.2
Metal Furniture.....September	*	*	+ 7.0
Jan.-Sept.	*	*	+ 1.0
†Television.....August	507,526	673,734	-24.8
September	621,734	832,631	-25.7
Jan.-Sept.	3,572,189	4,589,164	-20.8
†Radio.....August	1,028,852	965,724	+ 6.5
September	1,567,135	1,610,748	- 2.7
Jan.-Sept.	8,178,821	10,376,354	-20.5
Compressor Bodies.....July	281,423	*	- 3.0
July-Sept.	2,421,308	2,999,491	-19.0
Steel Barrels & Drums.....August	2,663,306	3,061,671	-13.0
Jan.-Aug.	20,767,211	24,762,946	-16.7
Steel Pails.....August	6,441,101	6,636,784	- 2.7
Jan.-Aug.	48,377,250	52,036,782	- 6.8
Typewriters.....August	125,833	*	*
September	139,562	*	*
Jan.-Sept.	864,230	*	*

* Not Reported

† Output

Sources for this information: Gas Appliance Manufacturers Association, National Electrical Manufacturers Association, American Home Laundry Manufacturers Association, Vacuum Cleaner Manufacturers Association, National Association of Furniture Manufacturers, Electronic Industries Association, Air-Conditioning and Refrigeration Institute, and U.S. Dept. of Commerce.

Bathroom scale

→ from Page 29

department, and so designed that it could be formed by one stroke of a press.

The elimination of circular-form "doughnuts," which were used as resting points on the floor for all previous model scales, was accomplished and, through considerable research, the design of a polyethylene plastic foot having the right amount of gripping surface for use on a tile bathroom floor was the result.

The decorative top, or platform, was a give-and-take proposition between the designer and the engineering department, again without sacrificing definition of the designer's concept. This was tooled up, and considerable thought given to it also, to accomplish forming the piece in one stroke of a press.

Three-in-one stamping of case

The scale case and scale platform were both tooled up on a three-in-one-operation stamping, much to the amazement of the designers, but this was typically true of all tooling, as the engineering department is well schooled along these lines, and because this same type of program has been undertaken over a period of years in the tool shop.

The coined word Strato-Flight had to be incorporated into the center portion of the scale, which is called the trim plate. This was accomplished by using pre-anodized aluminum stock, forming the definition, and engraving the name Strato-Flight through the use of dies in a punch press. By use of a special spray mask, two-color decoration without expensive lithography was obtained.

After checking out tooling with sample pieces from dies, 26 scales were assembled in Engineering for life test, because this was the most important work to be performed. Although accuracy and design concept had been achieved in hand sheet metal models, Engineering now had to check out tooling under production conditions. Through close observance by the engineering department on tooling performed in the tool shop, and also from outside shops, life tests of the 26 working models proved to be a success without sacrificing accuracy, good workmanship, quality or safety.

Newly-designed carton

The final stage of development was a shipping test of sample units, which meant design of a carton so constructed

to Page 61 →

FINISHING SYSTEMS...



for Miscellaneous Parts in Various Colors!

The Spray Booth and Finish Baking Oven illustrated above handle the Finishing Operations on a group of small parts . . . this equipment is part of a large Mahon installation that provides cleaning, rust proofing, painting and finish baking facilities for all items produced in a large automobile parts plant.

If you have a finishing problem, or are contemplating new finishing equipment, you, too, will want to discuss methods, equipment requirements and possible production layouts with Mahon engineers . . . you'll find them better qualified to advise you, and better qualified to do the initial planning and engineering which is so important in the specially designed equipment of a modern, properly coordinated production finishing system.

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Engineers and Manufacturers of Complete Conveyorized Finishing Systems; Metal Parts Washers, Metal Cleaning and Rust Proofing Machines, Conveyorized Cleaning and Pickling Machines; Dry-Off Ovens, Cooling Tunnels, Spray Booths, Electrostatic Spray Enclosures, Flow Coaters, Dip Coaters, Finish Baking Ovens, and Paint Stripping Equipment; Core Ovens, Soldering Ovens, Heat Treating and Quenching Equipment for Aluminum and Magnesium; Dust and Fume Control Installations, and Many Other Units of Special Plant and Production Processing Equipment.

See Sweet's Plant Engineering File for Information and Representative Installations, or Write for Catalogue A-659

... the EXPERIENCE that goes into the PLANNING and ENGINEERING of MAHON EQUIPMENT is the item of GREATEST VALUE to YOU!

MAHON



Million-a-Year Gas Refrigerator Sales Predicted

Gas refrigerator sales, which have never exceeded the 1948 peak of 400,000 units, should reach an annual volume of one million units within the next five years, according to Elisha Gray II, chairman of the board and chief executive officer of Whirlpool Corp. He said that sales of gas and electric refrigerators together should reach more than four million units a year by 1961, and five million units a year by 1964, thus reversing the trend of decline from six million units in 1950 to an estimated 2.5 million in 1958.

Admiral Profits Up 42%

Admiral Corp. recently reported that its January-through-September profit after taxes was over 42 per cent higher than for the same period in 1957. After-tax earnings were \$947,254, or 40 cents a share, on the 2,367,376 shares outstanding, compared with \$665,264, or 28 cents a share, during the same period last year. Profits before taxes were \$1,757,481, compared with \$1,343,707 in the January-through-September period in 1957. Consolidated net sales for the period totaled \$123,529,953, compared with \$129,044,499 last year.

Maytag Third Quarter Sales up Over Million

Third quarter sales of The Maytag Co., Newton, Iowa, topped those of the same period a year ago by over a million dollars, according to preliminary figures released recently by Claire G. Ely, vice president, marketing.

Net sales of the company and its domestic subsidiaries totaled \$26,550,000 during the third quarter of 1958, an increase of 4 per cent over sales of \$25,541,000 in the same period last year. Sales for January-through-September of 1958 totaled \$74,520,000, compared with \$73,530,000 for the same period in 1957.

Interchemical Earnings Up

Herbert B. Woodman, president of Interchemical Corp., in an address before the Philadelphia Securities Association, said that, while the figures are not yet final, the company's earnings for the period January-through-September, 1958 appeared to be equal to about \$3.37 per common share. This would compare with \$3.11 a share for the corresponding period of 1957. Woodman also reported that sales for the January-September, 1958 period aggregated approximately \$81,100,000, compared with \$82,900,000 for the same period in 1957.

Kelvinator Appliance Factory Sales Up in September

Kelvinator factory sales of appliances in September increased more than eight per cent over September of last year, and jumped nearly 15 per cent over August of this year, according to Walter Jeffrey, vice president and general manager. Increases over August were recorded in all the major product areas; refrigerators, home freezers, electric ranges, and home laundry equipment. Factory sales of refrigerators in September of this year were up 20.5 per cent over September, 1957.

Acme Steel Reports Bright Outlook

Acme Steel Co., Chicago, has reported consolidated sales of \$32,998,423 for the third quarter of 1958, compared to \$29,364,156 for the second quarter, an increase of 12 per cent. Net

income for the third quarter was \$1,631,088, or .59 per share, compared to \$1,137,369, or .41 per share in the second quarter, an increase of 44 per cent. In comparison with a year ago, third quarter net sales decreased two per cent, while net income increased 12 per cent for the same period.

Frederick M. Gillies, chairman of the board, said, "There has been a marked upturn in general business activity, especially in those areas affecting the welfare of the steel industry. With all business indicators pointing to a sustained upward volume of business, we have good reason to expect that our final quarter will be our best for the year, both in sales volume and earnings."

Waste King Appoints Four Key Distributors

Appointment of four new key distributors was announced recently by the Waste King Corp., Los Angeles. They are: Stanley Scott, Inc., Orlando, Fla.; Cagle Supply Co., Lafayette, La.; The Treaty Co., Greenville, Ohio; and Tri-State Wholesalers, Inc., Providence, R. I.

October Best Norge Month in Two Years

Norge factory home appliance sales in October jumped 24 per cent over the corresponding 1957 month, to \$10,900,000 from \$8,800,000, and were the best in 24 months.

Monthly volume was the highest since October, 1956, said Judson S. Sayre, president of the Norge Div., Borg-

Aluminum Trim for Autos Shows Marked Increase in '58

Aluminum for automobile trim, in varied textures, color, and form, is displayed in this unique exhibit. Frederick J. Close, vice president, Aluminum Co. of America, is shown holding a sample of textured dashboard trim from an Alcoa display featuring a forecast of possible aluminum applications on tomorrow's cars. Estimate of aluminum for decorative use on 1958 cars is 42,000,000 pounds.





Season's Greetings

May our wishes for the
cherished gifts of good health,
happiness and contentment be yours
throughout the entire year.

Chicago **Stearns**

CORPORATION

A Division of The Eagle-Picher Company

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Warner-Corp., Chicago. Refrigerator sales rose 57 per cent above the same period last year.

"Distributor orders for new refrigerators sparked the increase," Sayre added, "but automatic washer and clothes dryer retail sales also continued strong. The sales curve turned upward in June, and each month since then has been better than the preceding period."

Market Research Allied with Whirlpool President, Report

Robert E. Brooker, president, Whirlpool Corp., St. Joseph, Mich., has announced that, effective October 1, the market research department will report to his office. Harvey E. Weimer, general manager, market research department since 1955, will continue in that position.

In making the announcement, Brooker said, "The function of market research is so important to management that we feel it should be brought closer to our policy making group. The scope of the assignment will be broadened to include both long and short range planning."

NEMA Room Air Conditioner Section Heads Named

J. B. Ogden, vice president, sales, Airtemp Div., Chrysler Corp., was re-elected chairman of the Room Air Conditioning Section, National Electrical Manufacturers Association, at a meeting in New York recently. L. M. Larkin, general manager, Air Conditioning Div., Whirlpool Corp., was elected vice chairman of the section. Larkin succeeds Paul Augenstein, president of Chrysler Airtemp, as section vice chairman.

Coatings Industry Leaders Receive Annual Report Awards

A board of judges in the 18th annual survey of *Financial World*, national weekly magazine, rated three well-known suppliers as first, second, and third in the paints and coatings classification. Five thousand reports were entered in the competition. First in the classification was National Lead; second, The Glidden Co.; and third, Ferro Corp.

Net New Orders for Industrial Furnaces Up in September

September net new orders for industrial furnaces totaled \$4,846,000, up 37 per cent from the August volume of \$3,533,000. New business obtained during the nine months of 1958 amounted to \$31,351,000, down 47 per cent from the same period last year when \$59,066,000 in new orders were booked.

Ranco Opens New Florida Research Center

An accelerated research program, designed to help customers solve control problems, got under way recently with the official opening of the new Ranco Research Center at Pompano Beach, Fla. The building, which houses the new center, is said to provide adequate space and facilities for the present staff and operations, as well as planned space for future expansion.

Ranco makes temperature and pressure controls and valves for the air conditioning, refrigeration, appliance, and automotive industries, timers for refrigeration and laundry equipment, and starting relays with overload protection for electric motors.

Pemco Finalizes Marketing Department

Pemco Corp. management reports that its marketing department, as the result of organization plans made three years ago, now is functioning according to plan.

Charles Lohman functions in the dual capacity of vice president for marketing and vice president for sales.

The marketing services division under George Huber, director of marketing services and executive assistant sales manager, is charged with the responsibilities of (1) investigation of existing markets to determine whether Pemco is

obtaining its proportionate share of business, and (2) investigation of new markets and new products that could be made by Pemco. Serving directly under Huber is Donald Kohnken, market development engineer.

The engineering division is headed by James Willis. This division is charged with all services of a technical nature to assure satisfactory product performance, and acts as liaison between field, laboratory, and production.



Key members of Pemco shown formulating plans for the marketing department are (from left) James B. Willis, George S. Huber, Donald H. Kohnken, and Charles P. Lohman.

Consolidates Office and Manufacturing Facilities

The Youngstown Kitchens Div., American-Standard, has completed its announced plans to consolidate general offices and kitchen manufacturing facilities

Phillips & Buttorff Wins Air Force Range Contract

A contract to supply 1,200 Enterprise ranges for the new United States Air Force Academy at Colorado Springs, Colo., has been won by the Phillips & Buttorff Corp., Nashville, Tenn., according to W. R. Lawrence, president, and Paul Clements, general sales manager. The ranges will be installed in the kitchen

of the officer housing.

The range is a 30-inch model with 24-inch oven, Perfectrol thermal eye cook top unit, and clock-controlled oven with illuminated picture window. The ranges are to be shipped from the Nashville plant at the rate of a carload each month until the contract is completed.

W. R. Lawrence, president, and Paul Clements, general sales manager, Phillips & Buttorff Corp., Nashville, Tenn., inspect the first shipment of Enterprise ranges, part of a 1,200-range contract, built by the company for the U. S. Air Force Academy at Colorado Springs, Colo.



ties at its Warren, Ohio plant, according to C. D. Alderman, division president.

Previous to November 1, all administrative functions, including marketing, and production of wall cabinets and dishwashers, were located at the Salem, Ohio plant. Consolidation at Warren, where other production, warehousing, and shipping facilities were located, will permit greater efficiency of operation, Alderman said.

The division's contract stamping department continues to operate in Salem.

Patton Predicts

Steel Production

Steel production will rise 20 to 30 per cent in 1959 to between 102 and 110 million ingot tons, Thomas F. Patton, president, Republic Steel Corp., has predicted.

Patton foresees continued improvement in housing and reversal of the 1958 decline in the appliance market. Auto production, coupled with an expected buildup in steel inventories should, he estimated, lead to a 50-per cent increase in steel shipments to the industry.

The Republic president discussed briefly three factors which will have a strong impact on steel sales. They are the current reversal of inventory policy now under way, an expected improvement in the sale of consumer durables, and a strong and rising demand for producer durables.

New Management Control

for Dahlstrom Machine Works

A group, headed by Bruce Ballman, has acquired full control of Dahlstrom Machine Works, Inc., Chicago, manufacturers of high speed sheet and strip fabricating equipment.

The board of directors has elected Ballman, former vice president, to the positions of president and treasurer, and Rudy Toczyk, former sales engineer, to the posts of vice president and secretary.

Stevens Appoints

Chemray as Distributor

Frederic B. Stevens, Inc., Detroit, announces the appointment of Chemray Corp., Westchester, Ill., as distributor for its metal finishing products in the state of Illinois.

Chemray is a newly-founded organization headed by Ray Ledford, who was formerly associated with Industrial Filter & Pump Mfg. Co. as sales manager. The new distributor will handle the Stevens line of automatic plating machines, buffing and polishing compositions, and other metal finishing supplies.

Maytag Completing Distribution on Coin-Operated Equipment

The first group of Maytag's newly-franchised independent distributors for coin-operated commercial washers and dryers was announced recently by G. E. Ankeny, general sales manager for the appliance firm.

The 13 distributors announced will comprise about half the total number who will form Maytag's nationwide distribution network for their new commercial products. Franchising of the remaining distributors is nearly completed, Ankeny said.

Through these distributors, Maytag will seek to penetrate the market from three directions: the coin-operated laundry (often unattended); the coin route operation in apartments, dormitories, etc.; and individual installations in motels, trailer courts, institutions, etc. (See "New coin-operated laundry appliances," Page HL-30, September, 1958 MPM.)

J&L Modernizing at Cleveland Works

Jones & Laughlin Steel Corp. has announced plans for additional steps in the expansion and modernization program at its Cleveland Works. The new facilities will cost approximately \$3,500,000. Construction should be completed in the summer of 1959.

The Cleveland Works has been virtually rebuilt over the past two years at a cost of \$90 million, and production of steel for the appliance and automotive industries has been doubled, according to the report.

Norge Books \$30 Million in Orders in Eight-Day Trip

Distributor orders for more than \$30,000,000 in Norge home appliances were booked during an eight-day, 6,700-mile cross-country trip, Judson S. Sayre, president of Norge Div., Borg-Warner Corp., reported recently.

Sayre and four other Norge executives had just returned from merchandising conferences with 87 distributors in seven cities, from Boston, Mass. to Seattle, Wash. He reported the trip as "the most successful order-taking trip since September, 1956, with sales higher than anticipated."

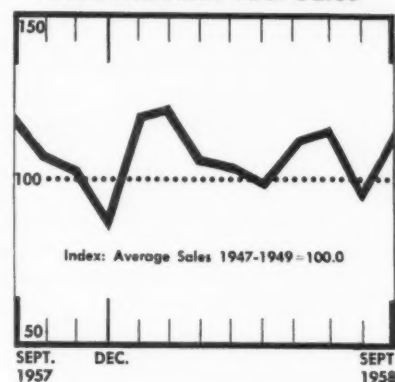
Included in the Norge team that toured the country were: Harold P. Bull, vice president, sales; J. D. Dougherty, field sales manager; W. C. Fisher, director of distribution; and Gordon G. Hurt, director of advertising and merchandising.

Used Machine Tool Sales Up

Sales of used machine tools, rebuilt or reconditioned by dealers or sold in "as-is" condition, surged upward 21.7 per cent in September over the sales totals of August.

The increase in sales, measured in dollar totals, was announced recently by the Machinery Dealers National As-

Used Machine Tool Sales



sociation, which comprises 225 of the nation's leading dealers in used machine tools. The figures, announced by R. K. Vinson, executive director of the MDNA, showed sales up to a point very near that of July, when a similar rise helped to indicate the approaching end of the "recession" of late 1957 and early 1958. The report does not include sales of new machine tools, domestic or foreign.

Ferro Reports Increase in Visitors From Other Countries

From June to October of this year, nearly 30 visitors from 12 foreign countries arrived at Ferro Corporation's International Division, Cleveland, to get answers to technical problems, or to inspect the research and production facilities, Clifford M. Andrews, vice president, International Operations, reports. For the year to date, the total is 65 persons from 17 different countries, including such widely-scattered places as Indonesia and Sweden.

Youngstown Announces Major Strip Mill Renovation

The 79-inch hot strip mill at the Campbell plant of The Youngstown Sheet and Tube Co. will be revamped in a two-year program that will cost in excess of \$50,000,000, officials of the company have announced. The improvement will enable the mill to roll

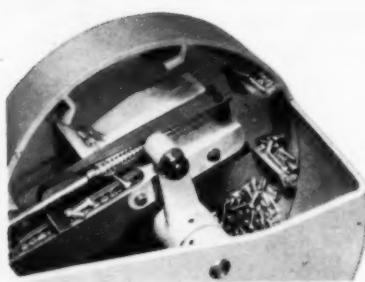
to Page 64 →

New improved auto-torque driver for screws, nuts

A NEW AND IMPROVED DRIVER for screws and nuts, called the Auto-Torque Driver, has been announced. Basically, it consists of the parts positioner head, plus a compact air-motor drive for the spindle and a newly-developed parts feeder, which requires no auxiliary motor or vibrator. In addition, it is equipped with a built-in sensing mechanism and an adjustable-torque clutch, which is reported accurate within five per cent of the torque setting, with even closer tolerance available for special applications. Minimum cycle time is 6/10 of a second, depending upon the threaded distance.

New concept in clutch design

A cage-controlled roller clutch, representing a new concept in overload clutch design, is a feature of the driver. Its accuracy is said to compare favorably with the most precise hand-torquing methods. When it "torques out," there is no impact and, due to the automatic



cycle, the operator need not develop a "feel" for the moment of disengagement. The operator cannot influence tightness of the fastener in any way after starting the cycle, and a self-locking arrangement prevents the adjustment from changing. To provide for high and low-torque requirements, the clutch is furnished in two torque ranges — 5 inch-ounces to 84 inch-pounds, and 48 to 120 inch-pounds.

Versatile parts feeder

The parts feeder is simple and compact. It has a straight track and a positive-acting escapement, which permits low-angle track mounting for parts control. In addition, its mounting between the members of a new dual-type column permits easy vertical adjustment

and saves space for close nesting of the units when installed at multiple stations. It is powered by a double-acting air cylinder, which actuates both the feeder drum and the shuttle-type escapement. As the positioner head cycles, the drum is rotated intermittently by the air cylinder, through a pair of wrap-spring clutches.

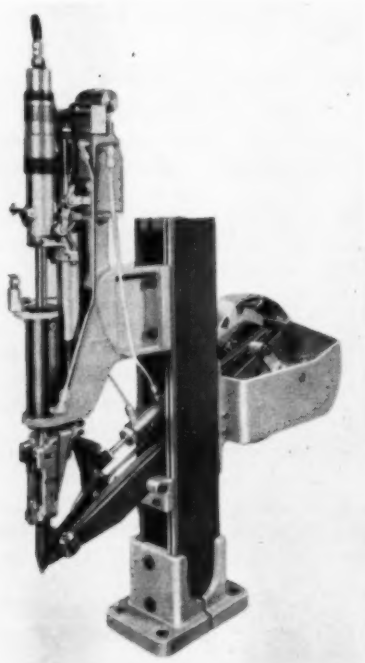
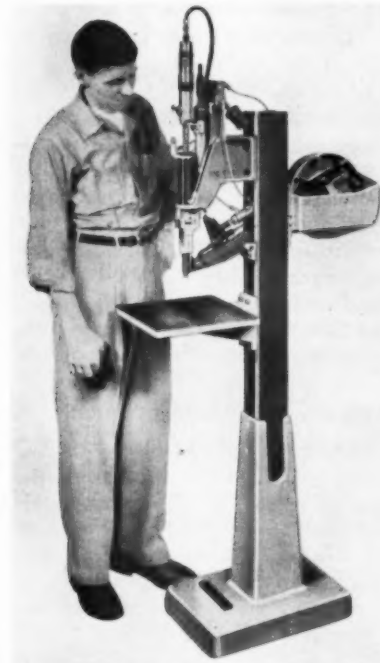
Sensing device for safety and positive ram loading

An important feature is the sensing device, which stops the machine if a part is missing or only partially driven. This assures quality control and is essential for automatic installations. Positive ram loading of the part from escapement into the chuck, and positive alignment of the piece by the chuck, are additional features. There is provision for handling and driving of screws and nuts in sizes from No. 4 screw to 5/16-inch diameter.

This auto-torque driver can be furnished with floor mount and foot treadle to initiate the cycle, or as a completely-automatic station with electrical connections and solenoid valve to automatically initiate the cycle.

For additional technical details, write on company letterhead to "Auto-Torque," c/o Special Projects Editor, METAL PRODUCTS MANUFACTURING, York St. at Park Ave., Elmhurst, Ill.

(Lower left) — Pedestal Model SC-100 Auto-Torque Driver, fully air-operated and with foot pedal to initiate the cycle. (Lower right) — Model SD-101 with electrical controls to operate the driver as a fully-automatic station. (Top of page) — Feeder drum and bowl, tooled to feed small fillister-head screws. An orienting wiper prevents jams, assuring proper entry of screw or nut into feed track.



Automatic brazing

→ from Page 21

and built specifically for inclusion into this Carrier assembly line. It was completely assembled, piped, wired and tested as shown in Fig. 3 before shipment to the Carrier plant to simplify installation. Pneumatic positioning cylinders, combustion equipment, and electric controls were mounted on the structural steel frame, forming a completely self-contained unit.

While the carriage is automatically held in brazing position, two burners are directed at each of the six joints as shown in Fig. 4. As this position is reached, a switch activates a solenoid-controlled valve to fire the burners at a predetermined rate to complete simultaneously all six joints. At the end of 35 seconds, an electric timer reduces the fuel mixture flow to an idling rate to permit the coil to remain in position until the operator is ready to move it to the next station. The cycle is repeated as the air cylinder moves the next coil into position.

Reproducibly-uniform joints are achieved by the elimination of variables from the brazing cycle. A gas combus-

to Page 71 →

INDUSTRY PERSONALS

Ivan Ingersoll has been named to the newly-created position of commercial laundry sales coordinator for The Maytag Co., it has been announced by G. E. Ankeny, general sales manager.

Ingersoll's entire employment background is in the self-service or coin-operated laundry area.

Leonard W. Smith, a veteran of 28 years in appliance merchandising and sales management, has been named merchandise manager of the Westinghouse major appliance division. His appointment to the new post was announced recently by John J. Anderson, manager of the division.

INGERSOLL



SMITH



Richard J. Keyser, consultant in the Manufacturing Services division of the General Electric Co., has been appointed Manager - Manufacturing of the Home Laundry department. He succeeds **E. E. Folsom**, who was promoted to General Manager of the Hotpoint Home Laundry department.



KEYSER



SYLVESTER

George R. Sylvester, president of Sylvester & Co., Cleveland, Ohio, engineering concern, has been elected president of the reorganized and recapitalized company, Continental Coatings Corp., 17706 Miles Ave., Cleveland, Ohio. Continental Coatings Corp. holds exclusive world rights to the new process, Flame Ceramics, developed by Armour Research Foundation, Chicago.

Logan T. Johnston, executive vice



JOHNSTON



STEWART

president, Armco Steel Corp., has been elected a member of the company's board of directors, according to Charles R. Hook, board chairman. Johnston joined Armco in 1925 as a salesman, and was made general manager of sales in 1947.

William J. Stewart has been elected president of The Cleveland Punch & Shear Works Co., Cleveland, Ohio, manufacturers of mechanical power presses, metal fabricating tools, and punching tools and dies. In his forty years of service to the firm, Stewart has been active in the growth of the metalworking industry.

Merritt L. Smith has been appointed to the post of director of advertising to Page 62 →

PEI shop practice forum → from Page 42

MPM PHOTOS FROM PEI FORUM



(Left) — Third session, seated L. to R.: Dale, Ervite; Reynolds, Erie Enameling; and Schulte, Minnesota Mining. Standing, L. to R.: Sopp, Alcoa; and Miller, Ferro.



(Above) — Last session, seated L. to R.: Forwith, Westinghouse; Thompson, Whirlpool; Bergeron, Univ. of Ill.; Spiers, Pemco; Giles, Hommel; and Meginnis, Industrial Enterprises. Standing, L. to R.: Bozzin, Ferro; Afflerbach, Ing-Rich; Slack, Hommel; and LeFort, Univ. of Ill. (Lower left) — Second session, seated L. to R.: Bozzin, Ferro; Richmond, Bureau of Standards; Bowman, Chicago Vit.; Johnson, Ferro; and Schiefferle, GE. Standing, L. to R.: Havens and Sams, Armco; Conaway, U. S. Steel; Nelson, A. O. Smith; Potter, PEI; and Willis, Pemco. (Lower right) — First session, seated L. to R.: Andrews, Univ. of Ill.; Reynolds, U. S. Steel; Patrick, Pemco; and Doty, U. S. Steel. Standing, L. to R.: Wilson, Vitreous Steel; Jones, Parker Rust Proof; Kleinhans, Porcelain Metals; and Vincent, Ceramic Industry magazine.



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The Pilot Models
and the Price
are O.K.
Order from
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"Yes, PEERLESS has
been meeting our
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a long time"

Peerless' consistency in quality and price through the years have led to many long, pleasant associations. Many customers have been with us for 25 years.

Our facilities for the manufacture of formed wire products are the best. These facilities combined with the knowledge acquired through years of experience give our customers the unmeasurable quality long associated with Peerless.

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FICTION and FACT

FICTION:

Conversion From Dry
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Equipped Paint Spray
Booths is Complicated.

FACT:

R P Paint Arrestors are
Basically Air Filters and
are as Easy as Filters to
install.

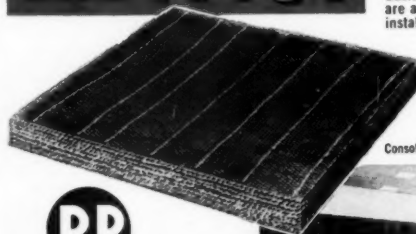


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Consolidated Freightways, Chicago

RP
**PAINT
ARRESTORS**



R P Paint Arrestors require no special construction and can be installed in any dry-type spray booth...quickly and simply. They can be mounted in vertical, horizontal or "V" banks... and require no plumbing, pumps nor special wiring. Maintenance costs are low, too, involving only the replacement of economical Paint Arrestors. To reduce down-time, save floor space, increase paint spray booth efficiency, write for complete information on R P Paint Arrestors.

Products of Research

RESEARCH PRODUCTS Corporation



DECEMBER • 1958 MPM

Painting 15,000 parts

→ from Page 31

the green circulating valve is closed while the red and yellow valves are open, and the control valve is switched to green position. To change from green to yellow, the green circulating valve is opened, the corresponding yellow valve closed, and the master valve is switched to yellow position. This causes the yellow paint to enter the polyethylene line, forcing the remaining green paint ahead. Twelve dummy panels are then run—which fill the booth area—as the color is changing. No color distortion results from failure to clean the paint orifice between changes. As the last of the twelve steel panels leaves the booth, a complete new color is operating and already coating the unpainted parts.

The combined circulating and electrostatic system provides for a reduction of paint inventory and makes for better "housekeeping." Thinner usage has been reduced about 20 per cent.

The conveyor—732 feet in length—formerly operated at four feet per minute. Now it operates at eight feet per minute. Other than changing the height of the conveyor, and adding to oven space, no substantial change was made when the electrostatic system was installed. The changeover was made during a slack period of 1957.

Ten foot long parts are painted

One shift now paints approximately 15,000 pieces and parts of various sizes and shapes. The longest part painted is a piece of two inch tubing, ten feet in length. Reciprocator stroke capacity is 14 feet. Parts to be painted are grouped on workholders in different quantities depending upon size. For instance, the 8-foot length, 2-inch tubing legs are hung vertically, 8 to a fixture on 2-foot centers. As many as 40 pieces of the trapeze bars are grouped on one fixture. These are one-inch tubes, 14 inches in length.

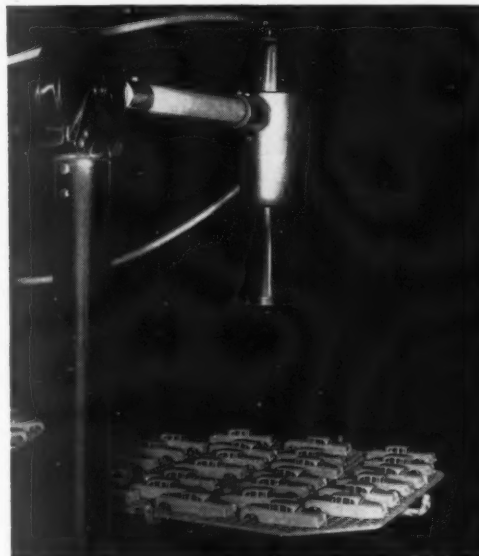
Bathroom scale

→ from Page 52

that its contents could be shipped to any point with a minimum amount of packing, and arrive at its destination intact and in perfect working condition. Again, the engineering department, working closely with the purchasing agent and carton manufacturers, came up with a very decorative carton that serves the dual purpose of a display container for retail outlets, and a very durable shipping carton.

tootsietoy

are painted by the millions with
RANSBURG NO. 2 PROCESS



Miniature automobile bodies of the tootsietoy line are efficiently and uniformly painted as trays of cars pass below one of the four Ransburg No. 2 Process atomizing bells.

QUALITY OF THE FINISH IS IMPROVED AND PAINT COSTS ARE CUT 65% WITH

Electrostatic Spray Painting

Dowst Manufacturing Co., Chicago, are sticklers for quality in the production of tootsietoy which are turned out at the rate of 25 million a year.

That's one reason they changed from hand spray to Ransburg Electrostatic Spray Painting.

RESULTS? Rejects are cut from as much as 5% to about 1%, for they're getting a more uniform, higher quality coating on all parts.

Colors are changed easily, and paint mileage is stepped up substantially. For instance, on one toy item, a gallon of paint coated only 1800 units by hand spray. Now, with Ransburg No. 2 Process, they paint 5500 pieces per gallon. That's because of the unmatched efficiency of Ransburg No. 2 Process.

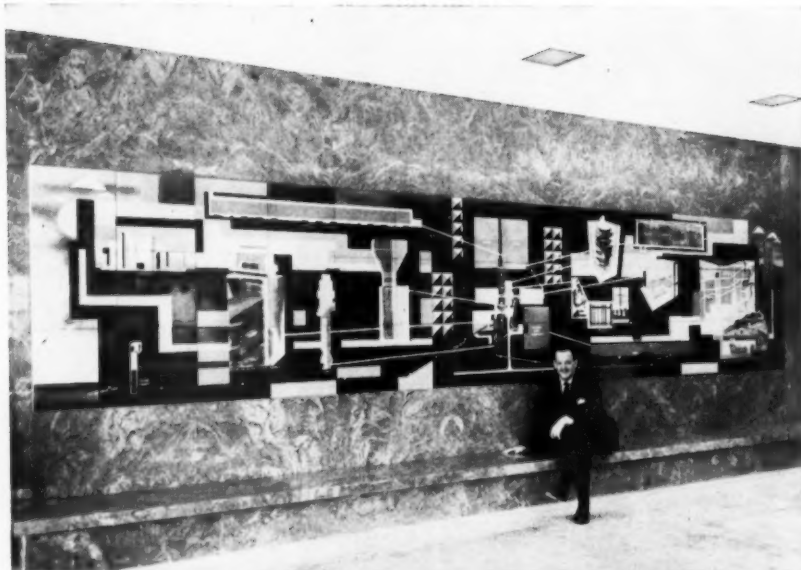
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Whatever your product—whether it's large or small—we'd like to show you what RANSBURG ELECTROSTATIC PROCESSES can do for you in YOUR finishing department. Write for our No. 2 Process brochure which shows numerous production line examples of electrostatic spray painting on a wide variety of products.



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Electro-Coating Corp.

P. O. Box 7822 • Indianapolis 23, Indiana



Completed mural after installation on wall of administration building of Clague Road filtration plant. Artist Winter is shown with his masterpiece in enamel.

Porcelain enameled steel mural beautifies Cleveland filtration plant

A COLORFUL, PERMANENTLY-SURFACED diagrammatic mural in vitreous enamel on 16-gauge steel has recently been installed in the \$22,000,000 Clague Road filtration plant, Rocky River, Ohio (Cleveland suburb).

Edward Winter, Cleveland ceramic artist, designed and executed this forty-two-sectioned mural with drawings furnished him by Havens and Emerson, Cleveland engineering firm. More than eight months were required by the artist to apply the enamels and fire the sections. Each section received approximately nine firings, and all vitreous colors were applied upon a glossy white surface.

Winter ground up his own enamels, using a special transparent-base frit and colored metallic oxides.

The mural depicts the filtration and purification processes of water from the time it comes from the crib in Lake Erie until it runs from the home faucet. Cut-away diagrammatic drawings were made of the pumps, traveling intake screens, mixers, filter, rapid mixer, laboratory equipment, flocculating tanks, and settling basins. An overall layout of the master plan of the entire plant is in the center of the mural. The white radiating lines show the location of the various types of equipment in the plant.

Dark brown, tan, blue-green, green, gray, pink, yellow, white and black are the colors used. Artist Winter pioneered this form of enameled metal mural art in 1934. His work is in many public buildings, and has been featured in more than 60 American and European museums.

ARCHITECTS: SMALL, SMITH, REED AND DRAZ, CLEVELAND, OHIO.

The artist is shown with the small color sketch made in tempera paint. Completed mural is in vitreous enamels on steel.



Industry Personals

→ from Page 59

and publicity for Metal & Thermit Corp., H. E. Martin, president of the company, has announced. In this position, Smith will have full responsibility for the operation of the company's advertising department and publicity agencies, and will develop an expanding public relations program. He has been with Metal & Thermit since 1932.

The O. Hommel Co., Pittsburgh, has expanded its West Coast sales staff with the appointment of **John C. Welch, Jr.** After an absence of seven years, he is returning to the Hommel organization, and will be primarily concerned with porcelain enamel frit sales, according to an announcement by Ernest M. Hommel, president.

Hardie W. Beck has been appointed general manager of the Pittsburgh plant of Joseph T. Ryerson & Son, Inc., steel and aluminum distributor, to succeed Arthur L. Petersen, who is retiring after 45 years of service.

Francis A. Bonner, Jr., has been appointed manager of Admiral International Corp. and Admiral Corp. Interamericana, it has been announced by Norman E. Johnson, vice president-foreign operations.

Edward Bachorik has been appointed general sales manager of Allied Control Co., Inc., New York, according to E. H. Gillette, president. The firm manufactures electrical relays, miniature electronic switches, and solenoid valves.

S. S. Kahn has been elected vice president of the Parker-Kalon Div., General American Transportation Corp., Clifton, N. J. He has been general sales manager since 1953.

The appointment of **Joseph F. Wrobel** as sales manager of the F. Jos. Lamb Co. has been announced by John K. Rye, vice president and general manager. The company designs and builds special machine tools and automation equipment.

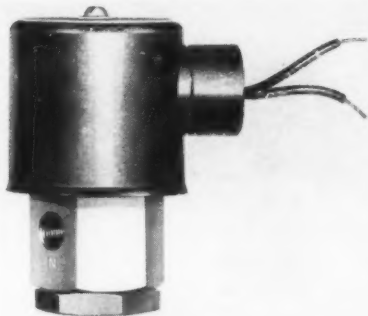
The appointment of **Robert G. Raney** as marketing manager has been announced by J. H. Manecke, general sales manager of Ranco, Inc. Raney's responsibilities in his new position include introduction of new products, promotion of existing products or their modifications for new appliances, and surveys of potential markets for all Ranco products.

New Supplies

→ from Page 44

open valve). Pipe sizes are $\frac{1}{8}$ and $\frac{1}{4}$ inch.

For further information, contact Dept. MPM, Atkomatic Valve Co., Inc., 545 W. Abbott St., Indianapolis 25, Ind.

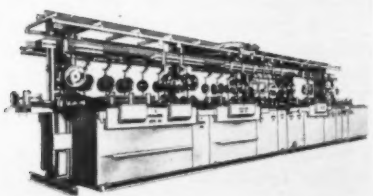


High Speed Plating Machine

Called the "Uniline," this new machine provides industry with a continuous uninterrupted high speed operation that is said to produce extremely high quality plating. With a high speed production capacity of 120 racks per hour, the Uniline handles the complete operation from cleaning to nickel and chrome plating. This new Single Row Machine is the result of extensive research and development, and due to its reportedly sound and simple design, offers important advantages such as complete reliability of operation, ease of maintenance, and minimum space requirements.

The machine is based on carefully worked out standards for construction . . . yet the completed machines are adaptable to a very wide range of cycle and production requirements, including high lifts and wide or narrow racks, according to the manufacturer.

Special carriers transport full rack load on steel rollers with permanently lubricated bearings. For further information, write to Dept. MPM, The Mesker Co., 1633 S. 55th Ave., Chicago 50, Ill.

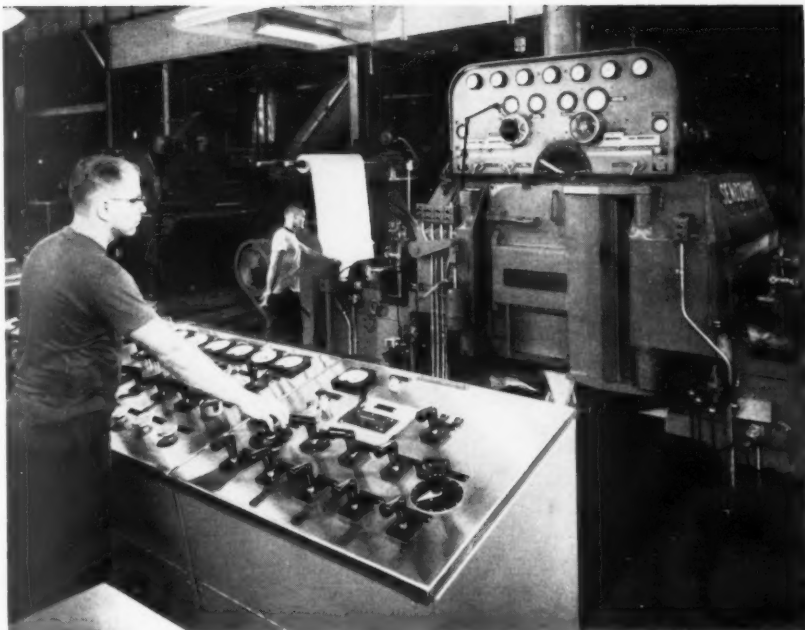


Slide Projector

A 500-watt slide projector, for which manufacturing rights may be granted under a royalty agreement with the inventor, has as one of its many features the instantaneous changing of slides which, it is claimed, eliminates wiping action or period of darkness. Other features outlined for the projector by its inventor are: recall of previously-viewed slides; use of open drawer or metal trays; feeding of intermixed slides in focus, accommodating up to 200 slides while maintaining sequence; and complete slide accessibility throughout cycle. Quiet cooling and pre-heating system-design maintains accurate focus.

For additional information, contact Dept. MPM, Ralph D. Lacoe, P. O. Box 1510, San Diego 12, Calif.

MPM DECEMBER • 1958



New stainless steel facility in operation by Jones & Laughlin

ALL OF THE FACILITIES are now in production at the new \$17-million Stainless and Strip Div. plant of Jones & Laughlin Steel Corp., M. K. Schnurr, division president, has announced. The plant, located in Louisville, Ohio, has an annual capacity of 36,000 tons of flat-rolled stainless steel, and contains 330,000 sq. ft. of operating space.

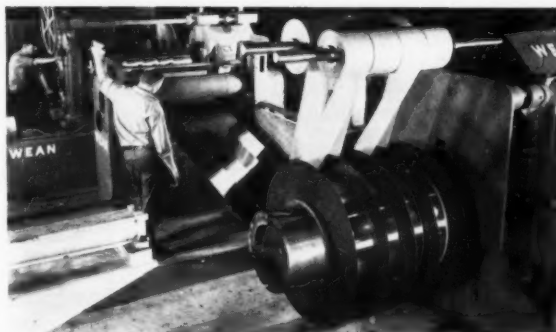
Major users of the increasing production capacity of the stainless steel industry will be: the appliance and automotive industries; the aircraft and guided missile industry; chemical and oil processing industries; food and dairy fields; and electronics, atomic energy, etc.

The principal equipment of the Louis-

ville plant includes a 52-inch cluster-type cold rolling mill which incorporates the latest engineering design for precision rolling and quality control of stainless flat-rolled products. The mill is capable of rolling stainless steel sheets in thicknesses ranging from $\frac{3}{16}$ -inch down to .003-inch.

Other equipment includes two continuous annealing and pickling lines for coils, box annealing equipment, a coil preparation line for incoming coils, a 54-inch temper mill, three side strip and slitting lines, two shear-to-length lines for cutting coils into sheets, an inspection line for surface check and recoiling, and polishing, grinding, and materials handling equipment.

(Upper photo) — This 52-inch mill is capable of cold rolling stainless in a range between $\frac{3}{16}$ -inch and .003-inch. (Right) — The 50-inch slitting line is but one of many finishing operations which are performed at the new mill.



larger diameter coils, up to 40,000 pounds, and of higher quality than now is possible, it is stated.

Two downcoilers, to handle larger coils from the revamped hot strip mill, were installed in 1956. At the same time, major producing units of the cold strip mill were revamped to handle larger coils. In the cold strip mill, temper mills and the pickling lines are being altered for the larger diameter coils, and new shearing capacity is being installed.

Five new buildings, with 210,000 square feet of floor space, will be erected. Three new slab heating furnaces, described as the world's largest used on hot strip mills to date, will be installed along with a new roughing section and a new crop shear. New power units will be installed on the present finishing section.

Rolling speed of the present finishing section will be increased from 1,400 to 2,250 feet per minute. Latest automatic electronic equipment will be installed to assure gauge and width control. The finishing section, with 33,500 horsepower, will have the largest total horsepower (main drive) capacity of any finishing section in the steel industry, according to the report.

Specifications for Metal Containers

Ten specifications for metal drums and pails ranging from five to 55 gallons have just been published as American standards.

A standards committee, newly-formed this year under the procedures of the American Standards Association, and sponsored by the Steel Shipping Container Institute, held its first meeting recently to discuss further national standards work for metal containers, and to deal with revisions proposed for the existing standards.

The complete set of ten standards is available at \$1.00 per set from American Standards Association, Dept. PR22, 70 E. 45th St., New York 17, N. Y.

Klixon Thermostat Production Moved to Versailles, Ky.

Metals & Controls Corp., Attleboro, Mass., has announced that all Klixon thermostat engineering, production, and sales for commercial applications will be centered at the firm's Versailles Products Div., Versailles, Ky. The move was effective Oct. 1.

Klixon thermostats used in air con-

ditioners, refrigerators, washers, dryers, etc., will be manufactured in the Versailles plant. Production of the firm's Precision thermostats used in aircraft, guided missiles, and electronic equipment will continue at the Attleboro plant.

G. Gilbert Wood, general manager of Versailles Products Div., will be responsible for overall operation, and Robert M. Glidden, formerly sales promotion manager of Metals & Controls, will supervise thermostat applications, development of new designs, and overall marketing operations.

Industry Lags in Modernizing

According to Richard S. Murphy, vice president of C.I.T. Corporation, a subsidiary of C.I.T. Financial Corporation, large industrial financing firm, the United States is approaching its greatest economic expansion, with many manufacturers underestimating the extent of the coming demand for goods and making inadequate plans for plant modernization.

"Many manufacturers tried to get through the recession without investing in new equipment," Murphy pointed out, "and saw the effects of that decision in dwindling profits. Today, almost one-fourth of the machine tools in use are over twenty years old, and more than 65 per cent are at least ten years old."

The extent of the coming demand for goods, Murphy pointed out, is indicated by the fact that the country's 1968 population will be 205,500,000 compared with today's 173 million, and 60,300,000 households compared with today's 50,400,000. Personal income by 1968, in terms of today's dollar, will total \$475 billion, or \$2,310 per capita, compared with the current \$345 billion, or \$2,057 per capita.

Red-Ray Appoints Representative

The Red-Ray Mfg. Co., Inc., Cliffside Park, N. J., manufacturers of radiant (infra-red) gas burners, announces the appointment of Edward S. Haworth & Associates, Elmhurst, Ill., as its representative in the Northern Illinois and Indiana territory. Red-Ray burners are used extensively for paint baking, water dry-off, burn-off, drying, and resin curing in the metals, glass, plastics, paper, and textile fields.

Break Ground for New Drake Manufacturing Plant



H. K. Foute (left), vice president of Drake Mfg. Co., Chicago, turns the first spadeful of earth on the site of the new Drake plant which will be erected at 4626 N. Olcott Ave., Chicago. Jack Krutek, secretary and sales manager, looks on. The new, modern building will add about 50 per cent to the firm's capacity for manufacturing miniature lighting assemblies and lampholders for pilot, dial, indicating, and illuminant uses. The company expects to occupy the building early in 1959.

New Olin Aluminum San Francisco Office

The Metals Div. of Olin Mathieson Chemical Corp. has opened a district sales office for Olin Aluminum in the Pacific National Bank Building, 333 Montgomery St., San Francisco. John M. Welch, director of field sales for Olin Aluminum, announced. Paul T. Persons, San Francisco district manager for Olin Aluminum sales, will be in charge of the office.

New Norge Gas Appliances

The Norge Div., Borg-Warner Corp., will introduce five new appliances in a major bid for more of an estimated \$750,000,000-a-year gas appliance business. To be placed on the market will be a gas refrigerator, two gas combination washer-dryers, a built-in gas range, and a gas range with a vertical broiler.

All except the built-in gas ranges were shown for the first time during the national convention of the American Gas Association.

Norge, with an estimated annual volume of \$100,000,000, now sells gas ranges, clothes dryers, and water heaters, as well as a full line of electric kitchen and laundry appliances. Norge tripled its sales between 1954 and 1957.

"We have taken the final step in our full-line gas appliances building program designed for long-term marketing," Judson Sayre, Norge president, said.

National Electrical Week

Scheduled for Feb. 8-14, 1959

R. M. Johannesen, president of Johannesen Electric Co., Inc., Greensboro, N. C., has been selected as chairman of the National Electrical Week Plan committee, it was announced recently. The announcement was made by N. J. MacDonald, president, The Thomas & Betts Co., Elizabeth, N. J., chairman of the National Electrical Week committee.

The 1959 observance of NEW is scheduled for next Feb. 8-14.

Whirlpool Drops

Ironer Production

Whirlpool Corp. has stopped production of its RCA Whirlpool automatic ironer.

In making the announcement, Harry M. Kane, laundry division general manager, pointed out that Whirlpool no longer finds it economically advisable to continue the manufacture of RCA Whirlpool ironers in the face of a steadily-declining market.

Kane cited figures for the ironer industry which show that, in the past ten years, the sale of ironers has dropped from nearly half a million in 1948 to less than 50,000 in 1957. "And there is no indication," Kane added, "that the situation will reverse itself until some new type of ironer device can be produced. We will continue to work toward developing such an ironer product. When we can develop a device that will offer suitable sales potential, we will bring it to market."

Merger Talks Terminated

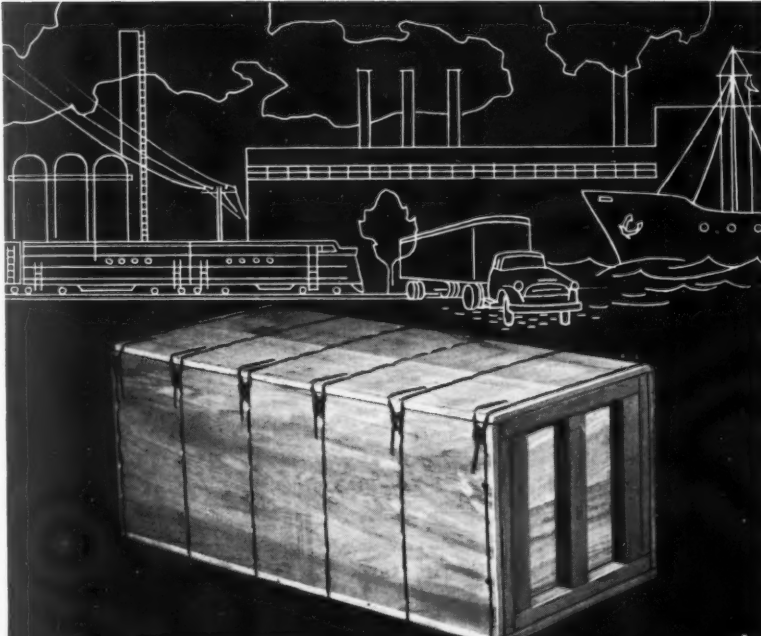
Ben Breslow, president of Utility Appliance Corp., and Bertram F. Given, president of Waste King Corp., both of Los Angeles, recently acknowledged that the two companies have discussed merger during the past months, but stated that these negotiations have been terminated, and no merger is contemplated.

Mitchell Suspends

Air Conditioner Output

Due to the "unusually cool summer weather," and the resultant disturbed market condition, Mitchell Mfg. Co., a division of Cory Corp., will not manufacture air conditioners next year, according to a franchise-terminating letter by J. W. Alsdorf, president, to Mitchell air conditioner distributors. Output of Cory's "Fresh'nd-Aire" air conditioners will also be suspended.

Mitchell will continue to make dehumidifiers, and to operate the air conditioner service department.



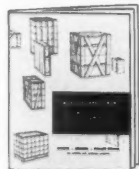
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editorial voice of the national safe transit program

devoted to improving packaging methods and shipping and materials handling methods for the appliance and metal products manufacturing industries. This section contains plant experience information and industry advances for the use of all executives and plant men interested in improving packaging and shipping methods and in loss prevention. The section contains complete information on the national safe transit pre-shipment testing program for packaged finished products and detailed reports of divisions and sub-committees of the National Safe Transit Committee.

Bisbee heads new NST corporation

**testing frequency and label requirements
established for certified companies—
certification fee for testing laboratories**

On October 29, 1958, the National Safe Transit Committee, Inc., was established as a separate independently-operated corporation, in order to better serve the manufacturing and shipping industry with its proved program of pre-shipment testing designed to reduce damage to goods in transit. The new organization, while assuming the functions and activities previously carried on by the National Safe Transit Committee of the Porcelain Enamel Institute, will, in addition, provide new and greatly-expanded services to manufacturers, container firms, testing laboratories, and all others dedicated to eliminating the waste caused by goods being damaged in transit.

The widely recognized NSTC pre-shipment test procedures, which are designed to predict the shipability of packaged products, will continue as the keystone to broader NSTC services. Identification of shipments meeting these industry-endorsed tests will be stepped up through increased use of both the well-known red and yellow Safe Transit affixed label and the recently introduced Safe Transit imprinted label which may now be imprinted on containers of tested units.

The former National Safe Transit Committee, established in 1948 by the Porcelain Enamel Institute as a part of its organizational committee structure, ceased to function when the new NSTC, Inc. began operations. Under the organizational blueprint for the new corporation the same personnel, formerly with PEI and who handled the Institute's Safe Transit activities, will now constitute the staff for the new independent organization.

Minimum testing frequency and label use requirements established

Effective January 1, 1959, a minimum frequency of testing and use of the Safe Transit labels will become requirements for manufacturer certification.

On the same date, certification requirements for qualified container and independent testing laboratories will be strengthened by the inclusion of an annual certification fee.

Supporting the theme that "Modern Claim Prevention begins before the product leaves the factory," important segments of the transportation and handling industry have placed an enthusiastic stamp of approval on the expanding NSTC pre-shipment testing program.

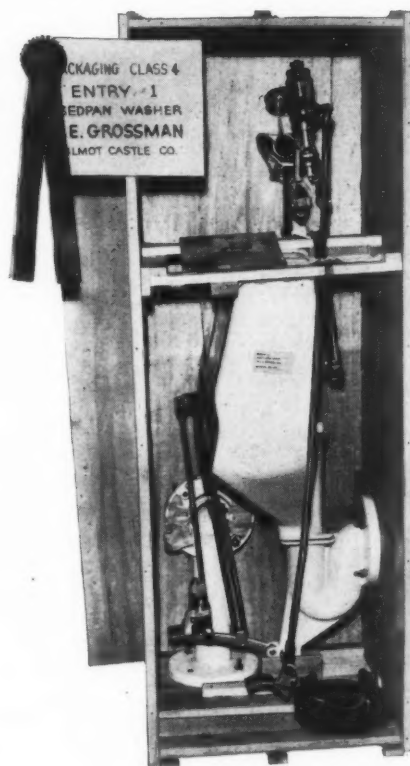
Within four weeks of the announcement of NSTC's new three-point claim prevention program, carrier associations alone had distributed over 5,000 copies of the explanatory folder "Three Points for Profit."

R. F. Bisbee, formerly with Westinghouse Electric Corp., and general chairman of the PEI Safe Transit Committee throughout its ten years of service, has been elected president of the new corporation. Bisbee, who prior to the incorporation was consultant on Safe Transit activities following his retirement in 1957 as manager of quality control at Westinghouse, is a recognized authority on quality control, packaging engineering, and related areas. Heading the corporation's headquarters office operation in Washington, D.C. is W. M. Wilkinson, whose responsibilities will include administrative duties and field liaison work.

President Bisbee, elected at the corporation's organization meeting, summarized the goals of NSTC, Inc. in the following statement: "The establishment of NSTC, Inc. provides the necessary organizational flexibility and freedom to enable it to fulfill its obligation to all of American industry, rather than to just one small segment. With a materially broadened scope, NSTC, Inc. will be better equipped to offer new and improved services which will significantly contribute to manufacturer, laboratory, and carrier efforts to reduce the threat to industry's economy posed by damage to goods in transit."



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New enameling plant

→ from Page 51

made to avoid limitations. We are ready for any type of work that comes along. This includes the application of porcelain enamel on aluminized steel, production with high temperature government specification frits, and any experimental work which may lead to enamel applications of new product lines. We feel certain that in the very near future there will be an increasing usage of porcelain enameled aluminum in many industrial applications, and in aircraft and appliance production. We'll be ready for those jobs when they arrive."

New High Strength Steels Announced

Substantial reductions in the cost of steel used in fabricating thousands of products are said to be made possible by a new line of columbium-treated, high-strength mild carbon steels introduced by Great Lakes Steel Corporation, it was stated at a news conference by W. D. MacDonnell, President.

Great Lakes Steel, a subsidiary of National Steel Corporation, has plants located in the Detroit suburbs of Ecorse and River Rouge.

Cost savings effected by the new GLX-W line range up to 35 percent, MacDonnell said. The new steels are regarded as an important metallurgical advance, he pointed out, because they make available, on a volume production basis, superior qualities of strength, toughness and weldability previously obtainable only in higher priced steels and the even more costly light metals used in many products.

Increased performance and requirements on certain items dictate the use of heavier carbon steel sections, to the point that the excess is of serious concern to both manufacturers and users, Mr. MacDonnell said.

Yield strengths of up to 60 thousand pounds-per-square-inch, obtainable from the new GLX-W series will reportedly permit the use of lighter sections and overcome this objection, Mr. MacDonnell explained.

Columbium is a metallic element occurring in oxide minerals. There are large deposits of columbium bearing materials near Montreal, Canada.

Detailing the physical, chemical and metallurgical properties of the GLX-W steels, Clarence L. Altenburger, Technical Assistant to the President, illustrated how strength, ductility and toughness of steel is increased by treatment with varying amounts of columbium.

Tri-section steel covers

convert gondolas into box cars

development provides protection to open-car cargo,
reducing "casualty rate" in shipping metal products

A NEW TRI-SECTION "flat top" corrugated steel cover, that converts a railroad gondola car into a sealed box car, has been unveiled. It is claimed that the cover provides full weather protection for freight usually transported in open cars, such as steel bars, sheets, forgings, castings, machinery, and motors. The covers also lend themselves to the protection of flat loads, or those that can be palletized or unitized, and handled by sling.

The cover, in three pieces for partial or complete loading or unloading, lies flat across the bulb channels of the car, where it is positioned by centering pins, and sealed tightly shut with load binders or other clamping devices.

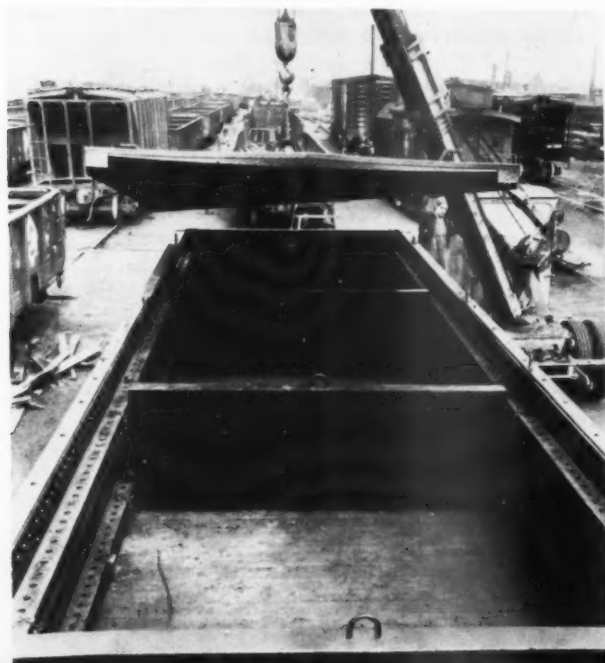
To completely seal a gondola car, the Erie Railroad, first to use the new covers, secures them with special heavy-duty load binders, four being used for each cover. Load binder hooks at the top end are attached to steel brackets welded to the covers. The lower end is fixed to an inverted U-bolt arrangement welded to the side of the car.

The covers are supplied to the railroads without any surface finish, and are painted in the same manner as are the gondola cars themselves.



PHOTOS COURTESY REPUBLIC STEEL CORP., BERGER DIV.

(Above) — Steel cover that converts railroad gondola car into sealed box car is held tightly by load binders. Cover, fabricated from corrugated steel, protects contents from elements. (Left, below) — First piece of corrugated steel cover is lowered into place on open railroad gondola car. Full cover consists of three pieces to allow for partial or complete loading or unloading of flat or palletized loads. (Right, below) — Tri-section "flat top" covers in place on gondola car, replacing canvas tarpaulins or waterproof wrappings previously used.



Presstime News

Husmann Resumes Construction on Eastern Plant

W. B. McMillan, president of Husmann Refrigerator Co., announced that construction of the company's new refrigerator plant near Haddonfield, N. J. has been resumed. Plans call for completion of this new manufacturing facility late in the second quarter of 1959.

Benjamin Electric to be Sold

Benjamin Electric Mfg. Co., Des Plaines, Ill., is to become the Benjamin div. of Thomas Industries, Inc., according to an agreement made recently. Stockholders of both companies will vote on approval of the acquisition during the first week of December. Both companies are in the commercial and industrial lighting field. The agreement was announced by Lee B. Thomas, board chairman of the acquiring firm, and John R. Bartizal, Benjamin president and chairman.



W. B. Nixon, 47, supervisor of consumer product markets, Armco Steel Corp., Middletown, Ohio, died November 12 as a result of a heart attack.

"Nick" Nixon was well known to appliance manufacturers as a result of his position with Armco. A company executive reported that there was no sickness or warning preceding his sudden death.

George S. Huber

has been named manager of sales, Ceramic & Glass Color Div., Pemco Corp., by Charles P. Lohman, vice president for marketing. Huber has been with Pemco for six years assisting the executive vice president and, more recently, the vice president of sales.



J. L. Singleton, vice president, Industries Group, Allis-Chalmers Mfg. Co., Milwaukee, Wis., was elected president of the National Electrical Manufacturers Association for the ensuing year at the association's 32nd annual convention in Atlantic City, N. J.



This X-ray diffraction unit is used to determine crystalline phases and quantity present in research projects at the new Hommel Research Center.

O. Hommel Company Formally Opens New Research Center

The O. Hommel Co. officially opened its new research center Tuesday, November 18, at an open house attended by employees, community leaders, and friends of the company in the Pittsburgh area.

The exterior is faced with architectural porcelain enamel, ceramic coated glass, and mosaic tile, while the interior features a dust-free constant temperature instrument room. This, as well as adjoining offices and the conference room, is lined with porcelain enamel curtain walls. President Ernest M. Hommel said that the new Hommel Research Center will better enable the company, through its research and development program, to meet the many challenges presented by significant advances on all fronts.

NEMA to Launch Programs to Increase Appliance Sales

All-out promotion drives to help electrical distributors, dealers, and power suppliers increase the sales of electric ranges, dishwashers, and water heaters will be launched soon by member companies of the National Electrical Manufacturers Association producing these appliances, it was announced recently at the opening of NEMA's 32nd annual convention.

The campaigns are aimed at increasing volume by cooperation with the industry's two main avenues of approach to the market, the Live Better Electrically Project, and the new National Electrical Living Program, and by stepping up NEMA's work in consumer education and promotional areas.

Gas Ranges Set Two-Year Mark

October shipments of gas ranges totaled 215,400 units, the largest month-



COMING FEATURES

DESIGN

DISHWASHER FOR THE SPACE SAVER MARKET

NEW VENDOR HAS UNITIZED STRUCTURE

FABRICATION

AN AUTOMATED LINE FOR THE FABRICATION OF REFRIGERATOR CABINETS

THE ALUMINUM BASE ALLOYS

FINISHING

A COMPLETE REVIEW OF HOT SPRAYING

PRODUCING AND SELLING ARCHITECTURAL PORCELAIN

A COMPLETE FINISHING LINE FOR CABINETS

GENERAL

APPLIANCE INDUSTRY FORECAST

PHOTO PREVIEW OF THE JANUARY APPLIANCE MARKET

ly figure in two years, according to the Gas Appliance Manufacturers Association. This total for free-standing and built-in models was said to be the largest since the 219,100 in October, 1956. Free-standing ranges accounted for 189,300 units in October, up 7.8 per cent from the 175,600 in the 1957 month.

Information on stripping hard-to-remove finishes

A recently-issued, 4-page folder describes a special stripper for the removal of epoxy resins, acrylics, vinyls, polyesters, and other hard-to-remove finishes.

It is claimed that the new stripper has the ability to reclaim imperfect parts which were formerly rejected, and to strip tough finishes from parts of paint-spraying equipment. The material requires no heating, and is said to be safe on steel, stainless steel, aluminum, brass, and copper.

A copy of this folder will be procured for you if you will write on your letterhead to METAL PRODUCTS MANUFACTURING, York St. at Park Ave., Elmhurst, Ill.

CLASSIFIED

Per column inch: 1 ti. 3 ti. 6 ti.
 1 to 2" inclusive \$18.00 \$17.00 \$16.00
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 column-inch multiples only. For reverse
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EQUIPMENT WANTED

Used pickling machine, in satisfactory
 condition for required dismantling for
 shipment. Spray type machine preferred.
 Send information to Guelph Stove Co.,
 Guelph, Ontario, Canada.

Automatic brazing

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tion controller mixes the low-cost natural gas with air to stoichiometric proportions and compresses the mixture. Gas-air ratio and mixture pressure are maintained over a wide range of demand. Thorough premixing and burning in specially-designed burners accelerates combustion and maintains constant heat release rate despite variations in gas main pressure. Pre-placement of brazing alloy assures a uniform quantity of filler material in each joint. Thus, by controlling the time during which heat is released at a predetermined rate, a uniform group of joints is brazed on coil after coil.

Each coil automatically tested

After the joints are completed, the carriage remains in the idling brazing machine until the operator at the expanding station has completed expanding a previously-brazed coil and has moved it to the original loading station. As the expanded coil moves out of the expander, the coil in the brazing position is automatically ejected along the track to the expanding machine.

The operator places hydraulic lines on each of the two connectors and applies pressure of 2,000 psi. This expands the copper tubing uniformly along the whole length, thus locking the fins in position.

A twofold purpose is achieved by the hydraulic expanding device. First, it locks the fins and second, it provides the means of giving each coil a complete 2,000-psi hydraulic pressure test for leaks and joint quality.

At the loading station, the operator removes the completed and tested coil shown in Fig. 5, and places another

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Home Laundry Appliance Conference talks wash and wear

AN MPM STAFF REPORT



Opening panel at the AHLMA Conference included E. G. Lipski, Philco; Helen Kendall, Easy; Cleo Cottrell, GE; and Mary Huck, Frigidaire.

THERE WAS AN EXCELLENT TURNOUT of home laundry industry representatives, home economics experts, educators, household equipment editors, and suppliers to the home laundry industry at the 12th National Home Laundry Conference, held October 30-31 at the Chase Hotel, St. Louis Mo. Although many aspects of the home laundry industry were discussed, "wash and wear" clothing and their handling in modern home laundry equipment was the principal topic of this constructive meeting sponsored by the American Home Laundry Manufacturers' Association.

Officiating at the meeting were: T. D. Kennedy, chairman, Home Laundry Conference Planning Committee (Frigidaire); H. L. Travis, chairman, AHLMA board of directors (Kelvinator); and Guenther Baumgart, AHLMA president.

Among the women headliners on the

program were: Helen Kendall, consultant, Easy; Mary Huck, Frigidaire; Amber Ludwig, *What's New in Home Economics*; Charlotte Montgomery, columnist; Dr. Elaine Knowles Weaver, Ohio State; Rose V. White, Corn Products Refining Co.*; Mary E. Pickett, Ironrite; Jessie Cartwright, Norge; Marian R. Ross, Singer Sewing Machine Co.; Betty Wadsworth, *Parents' Magazine*; and Lee Ballard, consultant.

Anyone attending the meeting without having given much attention to "wash and wear" must have come away with an entirely new impression of its importance, based on the attention given it by writers and speakers.

A new spotlight was turned on service in the home by Charlotte Montgomery,

*See "Fabric softeners . . . Amazing home laundry aids," Sept. MPM

First annual "Alma" awards for outstanding journalism in home laundry education were presented to five newspaper women at a luncheon during the home laundry conference. They are Wanda Wilson, *Ft. Lauderdale Daily News* (Fla.); Maxine Blackman, *The Houston Chronicle* (Texas); Barbara McNeil, *Tucson Daily Citizen* (Ariz.); Pat Phillips, *Burbank Daily Review* (Calif.); and Helen Baker, *The News-Palladium* (Benton Harbor, Mich.). Standing are Juel Ranum, *Whirlpool*; Guenther Baumgart, AHLMA; and H. L. Travis, *Kelvinator*.



who writes the column, "Speaker for the house" in *Good Housekeeping*, when she read numerous letters that had come to her desk from homemakers, giving their opinions concerning the service conditions relating to home appliances.

As a constructive part of the two-day meeting, leading manufacturers of home laundry equipment had models on display for demonstration purposes in a room convenient for visiting between conference sessions.

Automatic Brazing

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set of copper tubes in the carriage to begin another cycle.

Unit is flexible

The assembly system can be operated automatically or manually. For safety, six "stop" buttons are strategically placed so that any of the operators can stop the line when necessary. The setup is flexible and, at present, coils of five different lengths can be achieved by simple adjustment of carriages, press, and brazing machine.

Since this company began using this automatic brazing system, rejections have dropped to less than 0.05 per cent, where previously rejections were more than 1.5 per cent and, at times, as high as 5 per cent.

United Wallpaper Opens Third Resin & Chemical Plant

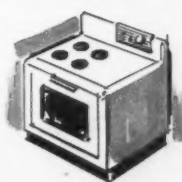
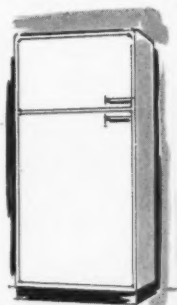
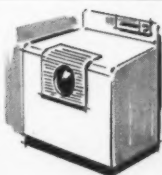
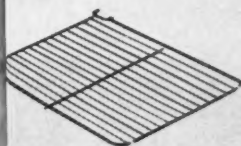
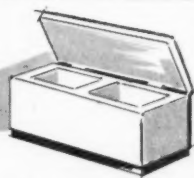
A third resin and chemical plant, the newly-built Steen Resin & Chemical Co., Chicago Heights, Ill., has been put into operation by United Wallpaper, Inc., Chicago. Among the many products manufactured and packaged for consumer sales will be varnishes, lacquers, paints, clear plastic finishes, and specialty products.

Heart of the Steen plant is the electronically-controlled reactor room. The laboratory, designed for future growth and diversification, is said to offer the ultimate in research and development facilities.

Eclipse Fuel Buys Lookout Boiler

Purchase of the Lookout Boiler and Mfg. Co., Chattanooga, Tenn., has been announced by A. Campbell Perks, president of the Eclipse Fuel Engineering Co., Rockford, Ill. It will be operated as the Lookout Boiler Div. of Eclipse, under the direction of Everett Magnuson, a vice president of Eclipse Fuel, who will make his headquarters in Chattanooga.

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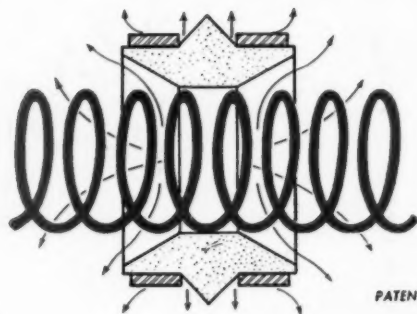
Naturally—she wants far more than exterior beauty and styling. She also wants the convenience of practical long lasting, easy-to-maintain refrigerator shelving, baskets and other necessary components. For continued satisfaction and repeat purchases she must have the type of product engineering that will guarantee more years of durable, dependable, maintenance-free operation from each working part of her new appliance.

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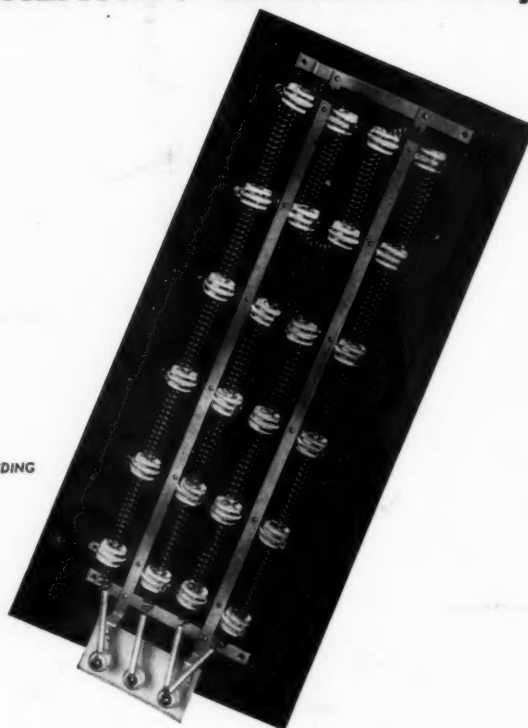
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NEW EXCLUSIVE **TEP** HEAT DESIGN NOW GIVES YOU LONGER HEATING ELEMENT LIFE, BETTER PERFORMANCE



PATENT PENDING

Cross-sectional view of new TEP insulator and cross-bar design. More space for air circulation assures better heat dissipation, longer wire life.



OTHER

TEP HEAT EXCLUSIVES

- FLOATING FRAME CONSTRUCTION — "TEP" patented feature allows unit frame to breathe; flexibility lengthens frame life. Rigidly welded frames distort, or welds break.
- SURE-LOCK INSULATOR SUPPORTS — specially designed by "TEP" eliminate dislocating and subsequent electrical failures.
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- SPECIAL NICKEL PLATING — exclusive "TEP" process assures a chrome-like finish, eliminates corrosion.



New, Slotted Cross Bars, Diamond-Shaped Insulators Reduce Heat Build-Up in Critical Zones

Striving always to build better heating elements and improve performance, TEP Engineers have now developed a new, improved method of supporting insulators that insures faster heat dissipation. The experience of TEP Engineers over the years has proven that most heating element failures occur at points where heat is trapped inside the insulators. High temperature build-up in these areas has a direct effect on wire life.

Open Construction Prolongs Wire Life 50%

As illustrated, the new exclusive TEP Insulators are designed with a diamond-shaped cross-section and are mounted and retained in slotted, overlapping cross bars. This provides more space for air circulation through the insulator, assures faster heat dissipation, and increases wire life as much as 50%. In addition, TEP Insulators are made from porosity-controlled Steatite which reduces micro amp leakage by controlling moisture absorption. These and other exclusive TEP Heat features give you longer heating element life and better performance.

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